CONTEMPORARY PSYCHOPATHOLOGY

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CONTEMPORARY PSYCHOPATHOLOGY

A Source Book

EDITED BY
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With an introduction by
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To

RUTH BURR, M.D.

PREFACE

THIS VOLUME is designed for courses in abnormal psychology. Recent advances in research, while essential to a comprehensive understanding of the field, generally appear in journals not readily accessible to undergraduate readers. To bridge this gap between the student and the widely distributed periodical literature, a representative survey of contemporary psychopathology has been here compiled. Important contributions to psychopathology have issued from fields as far flung as physiology, medicine, psychiatry, psychoanalysis, anthropology and sociology, as well as psychology. Some acquaintance with these major currents of research must be incorporated into the training of future psychopathologists, be they physicians, psychologists, or social scientists. This source book is but a step in that direction. Limitations of space, and of the technical training of undergraduate psychologists, have imposed restrictions on the selection of material. Many recent developments in psychoanalysis, anthropology and sociology had to be excluded. Therapy and the psychoses other than schizophrenia have received scant attention. In Section III it was felt that a relatively complete treatment of schizophrenia was of greater value than a more fragmentary treatment of the entire range of psychoses. Limitations of training at the undergraduate level dictated the omission of such fields as factor analysis, biochemistry and neuropsychiatry.

I wish to thank my friend Edward Alford for his generous support of this volume. I am particularly indebted to Professor Henry A. Murray and Dr. Robert W. White for their interest and help in the selection of material, and to Dr. David Rapaport and Dr. Raymond B. Catell for advice during revision. I have benefited much from Professor Gordon W. Allport who allowed me access to unpublished material. Thanks are due also to Professors Robert R. Sears, Donald W. Mac Kinnon, and Maria A. Rickers-Ovsiankina, for criticism and advice. I would like to acknowledge my indebtedness to Dr. Ruth Burr from whom I learned much of what I know of psychoanalysis, and to the Harvard Psychological Clinic for a vigorous and nurturant climate of opinion. Thanks are due also to the many contributors and publishers who gave permission to reprint their material. These are acknowledged in the text. I am grateful to Robert R. Holt, Dr. Frederick Wyatt, George Miller, Mrs. Pauline Berman Hahn, Babette F. Samelson, and Edward Ginsburg for assistance in reading proof, and to Mrs. Marjorie C. Ingalls for her generous assistance in the preparation of manuscript.

SILVAN S. TOMKINS

Cambridge, Massachusetts
July 1, 1943

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INTRODUCTION

It is almost twenty years since a book of this kind has come off the press, and in these days of boundless rootless zest for novelty, experiment and revolution, twenty years is a century. Certainly there are striking differences in viewpoint, aim and content between the well-known *Readings in Abnormal Psychology and Mental Hygiene* edited in 1926 by Dr. W. S. Taylor and the present series of papers culled by Dr. Tomkins, differences which spell out the history of two feverish decades of speculation, research and practice in the domain of psychopathology.

Twenty years ago we were still in the era of eclecticism. Professor Taylor's *Readings* is a weighty tome of nearly 800 pages, comprising over 220 excerpts from the writings of some 120 different psychiatrists and psychologists, one of whom, the ever-fertile Morton Prince, is represented by 21 fragments of his thought. The selections are deftly joined together end to end or connected by pontoon bridges of editorial writing in such a way that before he gets through the reader has had a look at every phenomenon of contemporary or historic interest in the realm of the abnormal, even crystal gazing and the cramps of writers and telegraphers having been somehow included in this grand tour of the continent of mind.

It is not always easy for the reader to keep his bearings as he is hurried along from one authority to the next. Certainly these breathless interviews provide no opportunity for becoming acquainted with, much less for establishing a stimulating transference to, the assumptions and theories of any one of the notables assembled. But, in any event, the reader, like the proverbial Cook's tourist, can feel that he has seen everything. And what more can a second-year student of psychology expect? Professor Taylor's selections were not chosen and arranged for the specialist or the scholar, but, in his own words, "as so many sections of a textbook for students," and as such it is valuable and will remain so for some time.

Turn now to this present volume and you will find a different story. The attempt at comprehensiveness has been abandoned; a great many topics are utterly ignored. Only areas that have been illumined in recent years by clarifying hypotheses or the acquisition of new facts are given place, and these are treated with specialized attention. There are half as many authors here, but each is permitted to speak his piece without fear of interruption. Dr. Tomkins is a most self-effacing host. And how different the two volumes are in substance! Here there are no orderly nosological definitions, no systematic accounts of the diagnosis, treatment and prognosis of every disease entity, no painstaking descriptions of eccentric mental states. Instead you find throughout a ceaseless occupation —speculative, clinical or experimental—with problems of dynamic interaction, of genesis and causation. The participants in this symposium are not so much concerned with descriptions of abnormal phenomena as they occur in everyday life, but with explanations of these phenomena, with the origin of, the development of, the dynamics of, the influence of, the significance of, the psychogenesis of, this or that particular process or condition.

The trends of interest and enterprise that account for the fresh orientation that is implicit in these papers are chiefly three: first, the spread of psychoanalysis with all the teeming suggestiveness of its theories and reported findings (Freud and his followers having been treated with depreciative condescension by the authors of 1926); second, the emergence of a new discipline, psychosomatic medicine, virtually non-existent in 1926; and third, the development of experimental procedures suitable to the investigation of vital problems of human behavior. Each of these exciting trends, full of promise for the future, is adequately represented in this collection of scientific articles which, as I see them, exhibit both the liberal catholicity of the editor and his talent for nice discriminations.

This book does not supersede Professor Taylor's *Readings;* it is more in the nature of a supplement, serving, as it does, other and special purposes. It is not a textbook in itself but the auxiliary of a textbook. Presupposing some knowledge of dynamic psychology, it is designed chiefly to illustrate clinical and experimental approaches to problems in abnormal psychology; to acquaint the student with recent advances in the field and so to supply suggestions for further and yet more profitable researches; and finally to present a large amount of important information on specific topics. It offers the most stimulating kind of reading to be recommended in an up-to-date course of instruction in this rapidly advancing discipline.

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CONTEMPORARY PSYCHOPATHOLOGY

I. Mental Disease in Childhood

I

THE SIGNIFICANCE OF INFANTILE SUCKING FOR THE PSYCHIC DEVELOPMENT OF THE INDIVIDUAL *

by

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INTENSIVE STUDY of the adaptive reactions of young babies brings to the psychiatrist interesting implications as to the evolution of psychic behavior from elemental biological and physiological processes. Among these early functional reactions sucking holds a place of primal importance. However in the minds of most physicians as well as of mothers and nurses this activity is associated entirely with the intake of food. As the first grasp of the organism on an object outside of itself and as the first coordinated relational activity it has had little consideration. Perhaps the concern of the pediatrician and the psychologist over the sucking of thumbs or other objects as a *dissociated* pleasure activity, and the association of the "sucker" with dependency, ineffectiveness and addiction has blinded those nearest the small baby to the fact that sucking is an extremely important developmental function. The sense of well being or pleasure which becomes such an integral part of this primitive function seems to be the first emotional or psychic response of the organism to the success of an important biological adaptation. Under normal conditions it facilitates the establishment of a positive attitude toward the mother, while internally it links vegetative with tactile motor activities in the building up of true psycho-motor behavior. It is to sucking as the tactile nucleus around which primary sensory impressions of sight, hearing and touch become associated that the writer wishes to call attention and to the way in which the biological functions of food getting and breathing serve as the foundation for the building up of processes for sensory intake and perception of another individual.

In order not to read into the infant's activities interpretations belonging to the well differentiated behavior of the mature person an attempt has been made to become oriented to the early ontogenetic development of the mouth and the probable function of the tongue in the fetus.

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* These studies of infancy are being carried out as part of the Dementia Praecox research directed by Dr. Nolan D. C. Lewis and financed by the Scottish Rites Masons. This paper is reprinted from THE JOURNAL OF NERVOUS AND MENTAL DISEASE, Vol. 90, No. 4, October, 1939, by permission of the publisher.

The lining of the oral cavity which in the beginning is also nasal cavity is ectodermal in origin. It is thus the structurally sensitized pathway between inner and outer world. Its rich supply from five cranial nerves (V, VII, IX, X and XII) suggests immediately its close connection with higher cerebral centers. The tongue muscle which is to be the chief organ of sucking, begins to develop in the 5mm embryo. Its original anlage just over the aortic arch suggests that its first function had to do with pumping blood toward the brain, so that in this first capacity it would be both nutritive and respiratory organ for the brain. It is thought that it migrates upward, developing in two parts, the root, which probably continues pumping upward, and the body, which grows up from the floor of the mouth into its sensory lining. The upward pumping is the reverse of the familiar sucking activity. It may be seen however in premature babies and occasionally in others who have had difficulty in the establishment of post natal sucking.

A two way activity is thus possible at birth. Mongolian idiots maintain this double functioning and constantly protrude and retract the tongue. The body of the tongue develops in close connection with the hard palate, a structure which with the epiglottis and diaphragm is peculiar to mammals. The hard palate is extremely sensitive in the new born, and it is from this location that the sucking reflex can be most readily elicited. It seems highly probable that some reflex stimulation may thus occur before birth through the stimulation of this sensitive area by the tongue. The motor activity of the root relates the tongue to both heart and diaphragm as does its probable origin from the infrahyoid pre-muscle mass. In the fetus all three muscles aid the circulation and thus act as nutritive and respiratory organs. Developmentally the three structures come from the same anlage and are in close proximity to the brain for which they all serve as pumping-circulatory system. The tactile function of this organ probably begins in its contact with the hard palate and goes on some time before birth, discharging sensory stimuli toward the cerebrum. This is perhaps the first direct tactile experience of the individual. It appears thus that the tongue has a peculiar biological significance due to its manifold functions and that it has an intimate connection with the brain from the earliest period of development.

In observing several hundred normal infants placed at the breast for the first time approximately 80% suck at once if they are securely held in comfortable apposition to the breast. At this stage sucking is largely an aspiration phenomenon and is a mechanical procedure without evidence of drive behind it. However as direct contact is effected not only with the lips but with the tongue and hard palate the function rapidly changes and an astonishing eagerness becomes evident. An *appetite* is rapidly aroused for this new contact situation and it is followed by definite signs of satisfaction before the infant is getting enough milk to lay this to nutritional factors. Respiration becomes deeper and more regular, color improves and muscle tone becomes better.

The close association of other sensory activities with sucking becomes evident toward the end of the first week. Of these the most striking are connected with the eyes. Many babies have half closed eyes during the first nursing periods, others do not fixate. As the sucking function becomes easy and gratifying the eyes remain open and soon begin to converge on the breast. As the mother talks to the infant or strokes its head, the eyes become directed gradually more to her face and definite coordination takes place. The new factor of sound is thus also introduced into the nursing picture. By the end of the second month in cases where no disturbance of routine has occurred, the infant looks at the mother at the sound of her approach, so that quite an elaborate coordination of activities has already taken place. Alertness and attention develop steadily from this time on until a definite recognition is evident.

At the same time the hands have begun to become associated into this early behavior. The tendency is marked in the new born, for the hands to seek the mouth or face when the infant is awake. With the beginning of nursing the free hand immediately approaches the mouth. Usually the mother holds this hand back so that it will not interfere and she does this by placing one of her own fingers in the infant's grasp. The baby appears to learn rapidly this piece of grasping and touch behavior and soon grasps clothing or places its hand on the mother's breast or on its own face, at times, grasping its own ear or nose while sucking. So that, by the third month the infantile athetoid movements have begun to give way to coordinated hand and arm activity.

These simple and obvious facts about sucking behavior, which, of course, vary somewhat with individual infants and mothers, become more significant with the study of premature infants and of those who have difficulty making this first oral adaptation. In a previous paper an attempt was made to describe in cases of extreme and persistent sucking frustration, the severity of the reaction which takes places. The infant failing to grasp the nipple becomes suddenly stuporous and is very difficult to awaken. In a short time he loses reflex excitability and becomes pale; namely, a shocklike reaction gradually comes about from which the infant must be restored by intravenous glucose or saline clysis. It was this striking frustration reaction which drew the attention of the writer to further investigation of the sucking mechanism.

Premature babies will usually suck if the nipple is brought in close apposition with the tongue. The fact that they are in urgent need of immediate nourishment usually makes it necessary to feed them artificially for a few days. They are seldom strong enough to draw milk directly from the breast. These infants usually make sucking movements on the feeding tube while fluid is being introduced into the stomach. The tube, or feeder, comes in direct contact with hard palate, which is an extremely sensitive area. Nurses often complain that in attempting to feed premature babies it is difficult to insert the nipple between the tongue and the hard palate and often the nipple is pushed immediately out by the tongue. On opening the mouth one finds the tongue closely adherent to the roof of the mouth. The infant appears to maintain its reflex tone and excitability through this stimulation of the hard palate.

When one observes a sleeping premature baby over prolonged periods, from time to time rhythmic sucking movements may be seen in which the lower jaw moves very slightly up and down (the tongue at this stage is closely imbedded in the floor of the mouth and its movements act on the entire lower jaw). This activity is also seen to follow when food has been given by gavage so that the infant has not used the sucking mechanism.

The impression is gained that the act of sucking here has a reflex effect in stimulating respiration, so that a tremendously important association exists between breathing and sucking. Traction on the tongue (Laborde) is a useful method of establishing respiration in the new born. The cyanotic attacks so common in premature infants rarely occur in those babies who manifest this activity of the tongue at frequent intervals.

A few illustrative cases are cited.

Babies A and B, twins—two months premature. Baby A weighs 1500 grams, Baby B weighs 2500 grams. The smaller infant shows much better reflex excitability and the "tongue sucking" was with him, a marked activity. At frequent intervals, the type of sucking described above was observed. Baby B, on the other hand, who seemed much better developed, had frequent cyanotic attacks which, however, gradually disappeared as regular feedings were established at three hour intervals.

Baby X, who had the appearance of a mongolian idiot, was one month premature and weighed 2000 grams. This infant had frequent attacks of cyanosis and died of respiratory failure in the sixth week. This infant was never observed to show tongue sucking. His entire muscle tone was poor. The feedings were difficult because the tongue was flabby with little reflex excitability. This infant showed an interesting regressive type of behavior in that, the diaphragm showed paroxysms of sucking movements upward, functioning probably as it does in the fœtus to draw nutriment and oxygen from the liver and the placental site.

Baby L, a foundling, was brought into the hospital in a shoe box wrapped only in a cotton cloth. His weight was 1500 grams. The cord had not been tied off but was apparently broken and several inches were still dangling loose. He was covered with sand or some gritty material. He was estimated to be two months premature. His survival to this exposure was probably due to the fact that he was born in an extremely hot spell in the middle of July. He responded immediately to the usual premature care and at the end of 24 hours was able to suck quite vigorously on the nipple, taking half ounce feedings of breast milk every three hours. He had one or two cyanotic attacks a day but they were not of a serious nature. Tongue sucking was observed in this baby during the first week, but as the drinking of food became well established, it disappeared as did also the cyanotic attacks. This child developed much as a normal infant would in the first month of his life, only relatively much slower. Eye focusing and tendency to grasp were beginning to develop in the sixth week. He gained very slowly but functioned adequately. There was some finger sucking, usually before the bottle feeding. In the sixth week the infant was functioning so well that according to the usual hospital routine first one night feeding was omitted, then the feeding intervals were lengthened from three to four hours. This cut down the sucking time approximately one hour.[1] There was within a week a marked change in the infant. Finger sucking increased markedly and a tension developed so that the infant became restless and slept much less. His eyes, instead of fixing on the nurse when he was fed, were either closed or else he looked straight ahead as if he were startled, and a distinct bulging of the eye-balls gradually occurred. An attitude of distinct anxiety and uneasiness developed.

An interesting reaction which developed gradually as the sucking time was lessened, was a slight rigidity of the entire body musculature. This was also noticeable during sleep. The infant slept with the head slightly retracted and often with the mouth opened as if there were difficulty in breathing. Respirations were shallow and irregular. There was no evidence of local obstruction to the respiration. At the end of ten weeks the infant was put back on the earlier feeding schedule so that the actual sucking periods were seven a day instead of five. In the course of the following three weeks, some relaxation took place and the finger sucking perceptibly diminished, but a physiological equilibrium was not restored as it would probably be in a well developed child. At the age of five months there was only fleeting eye fixation and apparently no recognition of the person caring for him. When raised up or moved about the infant became rigid and showed a marked tendency to the startle reaction. The infantile athetoid movements were still present and the grasp was exceedingly weak. There was a little recognition of the bottle and no attempt to hold it or to place it more comfortably in the mouth. At eight months this infant left the hospital and was placed in a foster home in order to give him more individual care.

The case of *Baby M* throws light on the problem from another angle. This infant was eight months old when he was referred to the writer for a diagnosis as to whether he was definitely mentally defective, also why he never showed any desire to eat. He was the fourth child of healthy young parents, with no history of mental disease in the family. He was a full term child, there was nothing unusual about the delivery and the infant weighed approximately 3000 grams at birth. There had been some difficulty in establishing respiration and attacks of deep cyanosis in the first forty-eight hours had led to a diagnosis of pulmonary atelectasis. Later it was found that the infant had also a patent foramen ovale. Bottle feeding was instituted immediately but the infant showed little inclination to suck and often had to be fed by gavage. He was kept three weeks in the maternity nursery and there seemed to be no definite difficulty with the heart and lung condition but the child was apathetic; reflex irritability was low; he seldom cried and would not suck. At home the mother attempted for two months to deal with this difficult situation but no improvement took place and a condition of severe malnutrition developed for which the infant was referred to a children's clinic. Here he was under observation for a month and a diagnosis was made of probable cerebral agenesis. Again the infant was taken care of at home for two months and the nutritional condition improved markedly but the lack of reflex irritability continued. There was a marked flaccidity of all muscles. In his fifth month the infant developed a severe bilateral otitis media and was put in a city hospital where he was desperately ill for two weeks, was given a daily clysis and frequent intravenous glucose. He had to be fed again by gavage. Making a good recovery from this acute illness, the child was again sent to the feeding pavilion for nutritional care. He remained a very difficult feeding problem and for the greater part of the time, nourishment had to be introduced artificially.

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[1] The amount of food ingested was the same.

When first seen by the writer he showed a strong similarity to a frog. He lay on the abdomen with the legs drawn up, his head was slightly raised, eyes were bulging, and a bilateral external strabismus was present. The child rarely cried but made a peculiar high-pitched croaking sound. The skin was pale, the muscles flabby with no coordination, and there were no signs of attention or of mental alertness in the infant. The eyes could not be made to focus, though they reacted normally to light. There was no evidence of lues. The head shape and measurements were normal, and there was no premature closing of the anterior fontanel. This infant was fed several times by the writer in order to determine where the difficulty lay in the taking of nourishment. No interest was shown at all in the food but one definite difficulty lay in the fact that when the child drank from the bottle, he appeared to lose his breath. Also there appeared to be an extreme disturbance when he was moved about and raised to the upright position. This appeared to be a circulatory difficulty connected with the getting of blood to the brain. The infant was put on increased feedings largely of solid stimulating food. An attempt was made to get him into a comfortable position before the feeding was begun and every precaution was taken to feed him slowly so that there would be no embarrassment of respiration. In a very short time the eating situation was made satisfactory and pleasurable. An immediate response was noticed in the eyes. The infant began gradually to focus on the nurse who gave the feedings and to watch light and to follow moving persons. In the course of a month the general physiological condition improved greatly and a special nurse was sent in to the infant daily for a general body massage, and to attempt the continued improvement of the feeding process. The color improved from a marked pallor to warm pink.

The improvement in this infant was slow as would be expected with the underlying circulatory difficulty. However, he soon learned to suck with comfort and to take adequate amounts of food so that he gained two pounds in weight in two months, cut four normal teeth, showed definite evidences of recognition of those working with him, began to turn his head to sound stimulus, to play with brightly colored rattles and bang his hands against the crib. He developed a very strong grasp and unusually strong tendency for biting. At the age of a year the child was able to take a piece of toast and put it in his own mouth and would make definite attempts to feed himself with a spoon. His learning ability was definitely established. Unfortunately, work with the child had to be discontinued because of an epidemic in the hospital. It is extremely doubtful whether he would ever catch up to a normal stage of mental development. But the interesting fact is that distinct improvement occurred by means of the tactile stimulation of the mouth and through the attempt to correlate eating and breathing with the development of the other sensory faculties.

A *final case* to be mentioned, for purposes of contrast, is that of a microcephalic idiot. This infant at birth showed a definite absence of the entire frontal development of the cerebrum. From birth it was unable to breathe and suck at the same time. The sucking reflex was present, but the feeding situation was difficult because the child had to stop to get air at frequent intervals. She very soon developed a general rigidity and lay for the most part of the time with head retracted, yawning a great deal, apparently attempting to ensue respiration. This infant never cried vigorously but occasionally made grunting sounds which are so characteristic of mentally defective children. She showed little tendency to suck her fingers but a general body restlessness was constantly present with jerky movements. Sleep was prolonged but was easily disturbed. The Moro reflex was still present at the end of the first year. The entire energies of this infant appeared to be taken up in maintaining a posture in which she could breathe easily and any disturbance of this adjustment brought a fear reaction. When she was given a bottle at the age of one year, she showed some slight excitement and general motility as it came within the line of her vision. When it was placed in her mouth she arched her head backward into a position of extreme extension, sucking vigorously and rapidly. Occasionally she would stop sucking in order to gasp her breath. If any attempt was made to place the bottle in her mouth with her head in the normal position she would spit it out with considerable choking. In this case the simplest adjustment between the sucking and breathing reflexes was never made. This infant had never been able to grasp and her fingers were usually spread out in a fanlike position. The breathing of this child was entirely dependent upon posture, and her mental development was restricted to the sucking function. Grasp, touch, and pain sense showed no evidence of development.

Baby M was able to learn sucking, grasping, and eye coordination through direct tactile stimulation of the mouth zone, associated with stimulation of the general tactile sensibility of the body.

Baby L lost what sensory coordination he had gained when the sucking time was reduced from seven to five periods a day. He has never recovered physiological balance but is subject to attacks of vomiting, diarrhoea, and shows other definite evidences of anxiety. He is markedly retarded mentally.

In conclusion, I would again emphasize the fact that an actual "hunger" exists in the new born baby for tactile stimulation of the mouth. Sucking appears to satisfy three different aims of the developing organism, namely, the getting of nutriment, the better reflex stimulation of the respiratory mechanism and finally the getting of tactile stimulation which seems to be as necessary for the progressive development of the higher associative faculties as food is for tissue development. The integration of these elemental drives in sucking activity gives it considerable importance. When it is not easily established, or when it is not sufficiently exercised or prematurely interrupted, significant dissociations take place in general maintenance of reflex tone and in the sensory motor integrations of vision, hearing and grasp which result in retardation of central nervous control. Dissociated sucking of thumbs or some habitual object which is so much dreaded in the nursery, appears to come about when the infant does not get enough sucking exercise in connection with the taking of nourishment. It appears to be a defense mechanism against a more serious regressive reaction in which all tactile reflex sensibility may be abandoned and the organism may deteriorate to a purely vegetative type of functioning.

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DISORGANIZING FACTORS OF INFANT PERSONALITY *

by

Margarethe A. Ribble, M.D.

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IN MAKING prolonged studies of the reactions characteristic of young infants, by far the most striking and consistent phenomenon encountered is the tendency, latent or overt, toward functional disorganization. It is a well known fact that trivial irregularities in the personal care and handling of a baby may bring about disturbances of eating, sleeping and elimination. It is not so well known that in certain sensitive or poorly organized infants these disturbances may affect permanently the motor and psychic organization of the child, and in certain cases, may even threaten life.

This characteristic instability, though particularly strong in the first three months of life, before the psychic functions are definitely in evidence, continues to manifest itself until well into the second year when speech and locomotion are established. The infant is in a condition of potential danger for a long period, probably due to the slow development and organization of his nervous system. The "danger" is on the one hand that of sudden or premature separation from the mother or of a poor relationship to the mother; on the other, it is the mounting tension of inner hungers. By this is meant the child's need for nutriment with inability at times to assimilate food, his need for oxygen which he may be unable to satisfy because of lack of development of the breathing mechanism.

In our research program we have attempted to study and clarify the essential experiences of the infant which may distort fundamental behavior patterns and thus disturb the orderly development of the child's personality, during this early period of forebrain incompleteness.

Three are outstanding: the first is connected with the management of sucking. There is a necessity for frequent sucking periods which are not limited or interrupted, the intervals carefully regulated to suit the need of the individual infant. Aside from the matter of food intake, we have been able to establish the fact that every young infant must have a minimum sucking time of two hours a day (the details of this I have taken up in a previous paper). The second factor is that of not attempting to train the functions of elimination, at least until the child can sit alone securely and has acquired a primitive sign language by means of which he can definitely make known his bodily needs. These two basic functions have an innate rhythm for each individual child which must be observed and respected since they are fundamental in the evolution of feelings of self-satisfaction and of body control and adjustment.

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The third factor, which includes also the other two, is the necessity for a long and uninterrupted period of consistent and skillful "psychological mothering" by one individual (where the mother herself is not available). This must continue at least until speech is well developed and the child has acquired a feeling of self-security and voluntary control of his body equilibrium. This need of the child I have called "stimulus hunger" because of its peculiar instinctual quality and because of its close analogy to food hunger. It implies much more than the routine care and feeding of an infant. This earliest human relationship is at first in the nature of a biological symbiosis in which two organisms with essentially different needs profit by the relationship, the mother getting the satisfaction of completing the creation of her child, the infant not only receiving food but getting a primary form of experience which helps to bring his sensory nervous system into functional activity. It is a necessary supplement in human babies to the period of intra-uterine protection; and without it serious privation reactions occur which appear to be the basis of emotional disorders in the older child and in the adult.

The nature of this attachment between infant and mother is so elusive and yet so essential for nervous integration that it has seemed worth while to study it in great detail. Three types of sensory experience contribute to the formation of the first relationship. Of these, tactile experiences are perhaps most obvious. The sense of touch is acute about the head and face. It is best developed in the mouth. Oral sensitivity has been shown by Minkowski to exist already in the three months' fœtus. The baby gets his deepest satisfactions and his first pleasurable orientation to the outside world through the mouth and through his own sucking activity. Passively, he gets satisfaction from being held by the mother, moved about and fondled. The satisfaction of the infant which results from these forms of stimulation may be registered in improved breathing. Respiration which is characteristically shallow, unstable and inadequate in the first weeks after birth is definitely stimulated reflexly through sucking and through physical contact with the mother. Infants who do not suck vigorously do not breathe deeply and those who are not held in the arms sufficiently, particularly if they are bottle fed babies, in addition to breathing disturbances often develop gastro-intestinal disorders. They become air swallowers and develop what is popularly known as colic. They have trouble with elimination or they may vomit. It seems that the tone of the gastro-intestinal tract in this early period depends in some special way on reflex stimulation from the periphery. Thus the touch of the mother has a definite, biological implication in the regulation of the breathing and nutritive functions of the child.

The sense of body position is acute in the infant at birth and holds a fundamental place in the building of the psychological tie between mother and child. If the body of the new born infant is not well supported by wrappings or if the child is suddenly picked up or moved about rapidly or violently, it reacts immediately with the startle reflex. This innate sensitivity or "fear of falling," as it has been called, tends normally to be overcome by gentle motion or rocking. The cradle and the rocking chair have a definite psychological position or usage in the first months of life. In our study of a large group of babies, we have found that many of those who do not get this form of mothering in the early months frequently substitute it themselves with head-rolling, body-rolling or other hyper-kinetic manifestations. It seems clear that the nervous system needs some sort of stimulus feeding or rhythmic vibratory movement to facilitate its development.

The third factor which comes into this elementary child-mother tie is sound. The majority of new born babies show a violent startle reaction to loud or sudden noises. After the first week of life it is evident that the human voice begins to exert a peculiarly soothing effect upon the child. We found that mothers who make a practice of speaking softly or singing to their infants while holding them have a much better relationship to the child. Sensitivity to noise tends to disappear much more rapidly from babies who are rocked and sung to judiciously than in those who are left in the isolated seclusion of the modern nursery. The developing sensory functions of the child thus get a primary focus and orientation toward the mother who either intuitively or knowingly primes these activities. Obviously, this is the foundation for a good emotional relationship later on. We have some data indicating that it has also to do with the capacity for intellectual concentration in the older child.

After the third month, approximately, the mother-child relationship takes on a distinctly new coloring. The psychic activities become rapidly evident at this time, and under favorable conditions definite awareness of familiar situations is present. Responses of appropriate smiling or crying accompanied by gross affective outbursts of joy or rage are seen. The "distance receptors," namely, the eyes and ears, have become associated with mouth activity. The infant has developed the ability to orient itself to reality through the faculties of sight and sound. Oral activity differentiates rapidly from this time on. Sucking loses some of its driving intensity and the energy which went into it begins to be displaced into smiling, crying, vocalization and chewing activity. Its grasping aspect is gradually transmitted to the hand so that the holding on or clinging of the baby is no longer done with the mouth. From this time on actual physical contact with the mother is not so imperative as seeing and hearing. In cases where the mother comes and goes to business or to social duties or where there is a continuous shifting of nurses during these months of primary emotional development, the child becomes rapidly uneasy and fearful. The actual presence of the mother is necessary at frequent intervals and it is important that the child is active in the withdrawal or separation which follows (usually through falling asleep) and not that the mother repeatedly goes away.

In view of these facts it is astonishing to find in making a study of our modern systems of infant culture that there is a strong tendency among pediatricians, and obstetricians to separate mother and child at birth and to isolate the infant into a highly sterilized and impersonal atmosphere. Any handling apart from giving necessary routine care, fondling, or anything in the nature of a tender relationship between mother and infant is definitely discouraged. There is practically no recognition of the fact that an infant has psychological needs or hungers, as well as a need for food. The sinister factors apparently responsible for this attitude are on the one hand fear of bacterial infection, on the other the dread of emotional dependency. This apprehension of the average child specialist actually brings about what might be called a psychological abortion, that is, just at the time when close contact with the mother is a necessity for facilitating nervous integration a completely unnatural separation is advised.

More subtle factors, of course, are responsible for separation between child and mother which because of their complexity are being dealt with in another paper. They concern the emotional health of the mother as determined by experience in her own childhood and by her emotional satisfaction in the marriage relationship.

Two types of reaction tend to develop gradually in young babies who have not been mothered and in those who have had adequate personal care and suddenly lose it. The first is general negativism. This may show itself locally in the oral zone in a refusal to suck, with complete loss of appetite or with failure to assimilate food. Accompanying this negative reaction to sucking one finds on close examination more or less hypertension or rigidity of all the body muscles. Arms and legs resist extension. The torso is arched slightly backward and particularly the muscles of the back of the neck are tense. This extensor reaction is at times accompanied by periods of frequent violent screaming. Another common accompaniment is breath holding or shallow breathing, and constipation. Apparently the tension in the motor system spreads readily from the skeletal to the visceral muscles.

The second type of reaction to lack of mothering and one which has still more sinister implications, is the depressive or regressive type. These infants when they are put to the breast or given the bottle make a few sucking movements in response to the stimulus situation, but quickly fall asleep. This so-called sleep soon takes on the quality of a stupor and the child does not awake for the next feeding, but has to be repeatedly tickled on the soles of the feet, shaken, spanked or chucked under the chin by the mother or nurse in order to arouse him. In a few babies who show especially poor functional organization the sucking reflex may disappear altogether and the child has to be tube-fed. Along with this oral lethargy there is a general loss of muscle tone and reflex excitability throughout the body. These infants soon develop a marked pallor and what the pediatrician describes as skin turgor is diminished. With this condition there are usually gastro-intestinal disturbances with regurgitation of food or diarrhœa. Breathing is apt to be irregular with periods of apnœa. Sometimes Cheyne-Stokes respiration is seen. Hiccoughs and yawning are frequent. The close similarity of this reaction with the familiar picture of shock is obvious. However, paradoxically in young babies it is insufficient stimulation which tends to bring it about. Treatment of the condition bears out this idea. These babies are restored to normal, where this is possible, by supporting the peripheral circulation with subcutaneous injections of saline daily. Body massage and raising the foot of the bed to increase cerebral circulation are helpful. Artificial stimulation of the sucking reflex must be maintained persistently for the best results.

It seems clear that both types of reaction indicate some sort or danger threatening the organism. If we speculate as to the meaning of this danger, it seems most probable that we are dealing with a defective blood supply to the brain which results in an anoxæmia to the rapidly developing brain cells. It appears that the muscular hypertension and hyperactivity help to bring blood into the cerebral circulation. The hyperactivity of the child appears to be also an attempt on the part of the organism to maintain contact stimulation.

After the marked increase in psychological activity in the third or fourth month of life the privation reactions of the child show a distinct change. They take on a more specific affective character and the posturing, rigidity and hyperactivity as well as the shock reactions become less evident. Also visceral responses fall more and more into the background. Smiling, tears and vocalizing become prominent. At this time, outbursts of emotional excitement, which are not always well differentiated but express positive or negative feeling, are shown through the entire motor system. These outbursts quickly gain momentum if the child is not immediately soothed. Temper tantrums are frequently seen in the latter half of the first year of life. Definite anxiety becomes evident now and if carefully traced is found to be invariably connected with the fear of losing the mother or somewhat later of incurring her disapproval. The much dreaded emotional dependency of the child begins at this time. Where a child too frequently experiences a situation of perfunctory care from a mother who is going immediately away, he develops an exaggerated tendency to cling to her, while on the same basis the somewhat older child develops violent feelings of jealousy.

Babies who are suddenly weaned or who must be separated from the mother by illness or other causes have a tendency to become preoccupied with regressive activities characteristic of a previous period of development. Thumb-sucking, which continues far beyond the normal limits for such behavior, is frequent. Preoccupation with the processes of elimination often develops and the small child soon divines the fact that he can get maternal attention through these activities when it does not come in a more normal way. Some of these children react by refusing to eat. A few lose the ability to vocalize.

A brief case history with the type of symptoms which were observed in four different children will serve to illustrate some of these reactions.

Infant "A" was a normal breast fed baby cared for only by her mother. She developed splendidly until five months of age, at which time the mother was suddenly called away from home by an emergency situation. The infant was left in charge of an aunt who had been given the most minute instructions as to her care, and the pediatrician was on call. This aunt was told by the pediatrician not to take the child up from the crib because he feared that her excellent routine might be spoiled. Because of this, she was not even held for her bottle feedings. During the first days of the mother's absence no marked reactions were observed by the aunt. The child did not cry and apparently slept soundly at night. At the end of the first week she was found violently rolling from side to side in the middle of the night, and during the day she began to scratch her face. When going to sleep she rolled her head from side to side, at times with such vigor that she knocked it against the sides of the crib. This behavior continued for several weeks, and finally the child began pulling out little wisps of hair with her fingers. Another symptom developed. She retained her stools and became constipated. The aunt in desperation telegraphed the mother to come home at once. She stated afterwards that she felt sure something was mentally wrong with the baby. On the return of the mother it was, of course, too late to re-establish breast feeding but her familiar care of the child which she naturally exaggerated soon brought relief. In the course of a month, with some help and suggestions the child was completely restored to normal. One residue persisted, however, from this experience, namely, an obstinate, chronic constipation. In spite of a carefully regulated diet, this child would go four or five days without the passage of a stool. The mother came again to our study group for advice and was told not to give the infant enemas or suppositories, but to take care of the difficulty by giving the child more attention in other ways. Complete body massage daily was advised. A rocking and rolling chair was procured for her and with a great deal of loving care the condition appeared to be entirely corrected. However, this infant still suffered from the latent effects of the separation. Some months later, the mother went away for a few days' rest in the country and the child was left in the care of her father and a competent nurse. The head-rolling symptom reappeared on the second night that the mother was away and the obstinate constipation re-developed. In following this child's development through a period of four years, the same type of reaction invariably recurred if she was separated for a short time from her mother, and at the present time whenever she sees her mother put on her hat, unless she herself has been dressed to go out, she becomes uneasy and reacts by twisting her hair.

We are reminded by the activities of this small child of some of the mourning rites of primitives who beat on their heads, tear out their hair and rock the body back and forth. Obviously this baby was too young to have any conscious awareness of missing her mother, and what we see is probably a primitive attempt to maintain a kind of stimulation given her through mothering care.

It would obviously be out of place yet to connect these early infantile experiences too definitely with the extensive personality disorders seen in the mentally ill individual. Our present research program is to make prolonged, analytic studies of several older children who present functional disorders which appear to be connected with early infantile experiences.

At the present time it must suffice merely to cite three examples of the problems for our continued investigation and for later report. One of these is a boy of ten who has no sphincter control, this condition developing during the past year. This is a highly gifted child with an I. Q. of 140. He has mood swings in which he varies from a completely passive, depressed individual to a sullen and rebellious child with outbursts of temper and screaming. At other times he takes the rôle of an infant, talks baby talk and is unable to dress himself.

A second child, age five, has become completely mute in the last year, following a number of traumatic experiences in connection with sucking, with adjusting to new forms of food, and with adjusting emotionally to other children.

A third child, age eight, is a stutterer, and also has periods when he does not speak for days at a time. During these periods, he will frequently kneel and kiss the floor, or kiss his own image in the mirror. This was an unwanted child who from birth had extremes of inconsistent mothering, complete rejection being followed by exaggerated manifestations of affection.

3

THE PREDISPOSITION TO ANXIETY *

by

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The considerations which I present have to do chiefly with the predisposition to anxiety and its relation to increased narcissism, especially in severe neuroses. I present these considerations largely in the form of questions rather than conclusions. The stages by which I arrived at these questions I give here in order to present the background of this paper: (1) the analysis of particularly severe neuroses in adults, (2) the searching for supportive or related data in the medical, psychiatric and psychoanalytic clinical experience of myself and others, (3) a supplementary review of some experimental work and observations, (4) a review of Freud's later publications concerning anxiety, especially The Problem of Anxiety, (5) and finally, a return to my own case material which I reviewed in the light of my questioning. For the sake of consolidating this presentation, however, I shall now take this circle of search in a little different order. I shall reserve the presentation of the case material for a subsequent paper in which I hope to discuss also some special considerations of treatment. I have chosen this order because I believe that the clinical material in itself is inevitably so detailed as to be possibly confusing unless the reader is already aware of the underlying thesis. In my work, however, the clinical material came first and the thesis was the result of my observations. In this paper I shall first discuss Freud's later statements concerning anxiety; I shall then present factual observations and the results of experiments of some significance in the problem of basic anxiety.

I

In The Problem of Anxiety, Freud says:

> Anxiety is the reaction to danger. . . . But the dangers in question are those common to all mankind; they are the same for everybody; so that what we need and do not have at our disposal is some factor which shall enable us to understand the basis of selection of those individuals who are able to subject the affect of anxiety, despite its singularity, to normal psychic control, or

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* From the *New York Hospital and Department of Psychiatry, Cornell University Medical College*. Reprinted from The Psychoanalytic Quarterly, Vol. X, No. 1, January, 1941, by permission of the publisher.

> which on the other hand determines those who must prove unequal to this task. (p. 121)

Then after commenting briefly on the inadequacy of Adler's organ inferiority explanation, Freud turns to a critique of Rank's birth trauma theories. What Freud says here is of importance in regard to his own evaluation of the rôle of the birth trauma and is in no sense an endorsement of Rank's somewhat mystical therapeutic aggrandizement of it.

> The process of birth constitutes the first danger situation, the economic upheaval which birth entails becomes the prototype of the anxiety reaction; we have already followed out the line of development which connects this first danger, this first anxiety-occasioning situation with all subsequent ones; and in so doing we saw that they all retain something in common in that they all signify a separation from the mother, first only in a biological aspect, then in the sense of a direct object loss, and later of an object loss mediated in indirect ways. (p. 122)

Then, in objecting to Rank's emphasis on the severity of the birth trauma as a determinant—the main determinant—in producing varying degrees of intensity of the anxiety reaction in different individuals, Freud says:

> The emphasis on the varying severity of the birth trauma leaves no room for the legitimate ætiological claim of constitutional factors. This severity is an organic factor, certainly, one which compared with constitution is a chance factor, and is itself dependent upon many influences which are to be termed accidental, such as for example timely obstetrical assistance. . . . If one were to allow for the importance of a constitutional factor, such as via the modification that it would depend much more upon how extensively the individual reacts to the variable severity of the birth trauma, one would deprive the theory of meaning and have reduced the new factor . . . to a subordinate rôle. That which determines whether or not neurosis is the outcome lies, then, in some other area, and once again in an unknown one. . . . For no trustworthy investigation has ever been carried out to determine whether difficult and protracted birth is correlated in indisputable fashion with the development of neurosis—indeed, whether children whose birth has been of this character manifest even the nervousness of earliest infancy for a longer period or more intensely than others. If the assertion is made that precipitate births . . . may possibly have for the child the significance of a severe trauma, then *a fortiori* it would certainly be necessary that births resulting in asphyxia should produce beyond any doubt the consequences alleged. . . . I think it cannot yet be decided how large a contribution to the solution of the problem [of the fundamental basis of neurosis] it [*i.e.,* difficult birth] actually makes. (pp. 124–126)

From his chapter on Analysis of Anxiety in the same book I quote the following:

> But what is a "danger"? In the act of birth there is an objective danger to the preservation of life. . . . But psychologically it has no meaning at all.

> The danger attending birth has still no psychic content. . . . The fœtus can be aware of nothing beyond a gross disturbance in the economy of its narcissistic libido. Large amounts of excitation press upon it, giving rise to novel sensations of unpleasure; numerous organs enforce increased cathexis in their behalf, as it were a prelude to the object-cathexis soon to be initiated; what is there in all this that can be regarded as bearing the stamp of a "danger situation"? . . . it is not credible that the child has preserved any other than tactile and general sensations from the act of birth [in contrast to Rank's assumption of visual impressions]. . . . Intrauterine life and early infancy form a continuum to a far greater extent than the striking cæsura of the act of birth would lead us to believe. (pp. 96, 97, 102)

Here I realize we are symbolically and figuratively in deep water, but at the risk of finding myself in a sink or swim situation, I shall raise some questions now and repeatedly throughout the rest of the material of this paper. It certainly seems clear that the birth trauma occupies no such exalted place in etiology or therapy as was once assigned to it by Rank; it seems indeed to have fallen quite into disrepute as an etiological factor in the neuroses. Yet we raise the question whether variations in the birth trauma are so insignificant in their effect on later anxiety—when birth is indeed the prototype of human anxiety—as we have been assuming. Is the birth trauma so opposed to the importance of constitutional factors as is implied in Freud's critique of Rank's position, as really 'to leave no room for the legitimate ætiological claim of constitutional factors,'[1] or may not the anxiety-increasing factors of a disturbed birth process combine with or reënforce the constitutional factors in the fashion of multiple determination of symptoms with which we are quite familiar? If the accumulated birth trauma of the past is so important as to leave an anxiety pattern in the inherited equipment of the race, is it then to be expected that the individual birth experience will have been nullified by this inherited stamp? If so, when does an anxiety reaction begin to appear—after birth, at birth, or is it potentially present in intrauterine life, to be released only after birth?

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[1] I believe that elsewhere Freud himself has stated his attitude a little differently, and clearly does not in general consider the constitutional and the accidental as leaving no room for each other. He deals with this in a forthright fashion in his footnote to the first paragraph of his article on the Dynamics of Transference (1912).

> 'We will here provide against misconceptions and reproaches to the effect that we have denied the importance of the inborn (constitutional) factor because we have emphasized the importance of infantile impressions. Such an accusation arises out of the narrowness with which mankind looks for causes inasmuch as one single causal factor satisfies him, in spite of the many commonly underlying the face of reality. Psychoanalysis has said much about the "accidental" component in ætiology and little about the constitutional, but only because it could throw new light upon the former, whereas of the latter it knows no more so far than is already known. We deprecate the assumption of an essential opposition between the two series of ætiological factors; we presume rather a perpetual interchange of both in producing the results observed. . . . The relative ætiological effectiveness of each is only to be measured individually and in single instances. In a series comprising varying degrees of both factors extreme cases will certainly also be found. . . . Further, we may venture to regard the constitution itself as a residue from the effects of accidental influences upon the endless procession of our forefathers.'

Coll. Papers, II, p. 312.

We are used to thinking of anxiety as having psychological content, but is there a preanxiety response which has very little psychological content? There are anxiety-like behavior patterns in lower animals, even in those that are not viviparous. The human anxiety pattern varies greatly in its symptomatic form. Most commonly it contains cardiorespiratory symptoms which seem indeed to be the nucleus of the birth experience. But are there events besides birth itself, perhaps in the way of untoward events in intrauterine life or in the first few weeks following birth, which might constitute danger situations and be reacted to with something akin to anxiety in fœtal life or in the first few weeks of postnatal life?

The fœtus moves about, kicks, turns around, reacts to some external stimuli by increased motion. It swallows, and traces of its own hair are found in the meconium. It excretes urine and sometimes passes stool. It has been repeatedly shown that the fœtal heartbeat increases in rate if a vibrating tuning fork is placed on the mother's abdomen. Similar increases in fœtal heart rate have been recorded after sharp loud noises have occurred near the mother. This finding is reported by a number of investigators. Two of them (Sontag and Wallace) found marked increase in fœtal movement in response to noise of a doorbell buzzer; this was especially strong and consistent when the buzzer was placed over the fœtal head. Responsiveness to sound began at the thirty-first week of intrauterine life and increased as the fœtus neared term. The fœtus may suffer hiccoughs, even as early as the fifth month; and respiratory-like movements are noted in the last month. Sometimes the fœtus sucks its own fingers and cases have been recorded in which the infant was born with a swollen thumb; and it is by no means rare for newborn babies to put their hands directly to their mouths. One questions what has been the rôle of sucking in these cases. Has a fortuitous meeting of hand and mouth served any function and been prolonged because of this? It would seem that the fœtus is relatively helpless; and that while we cannot speak of any perception of danger, we still are faced with the quandary of what is the reaction to untoward conditions of intrauterine life, such as might in postnatal life produce pain and discomfort and be reacted to by crying. I raise the question whether the fœtus which even cries *in utero* if air has been accidentally admitted to the uterine cavity, reacts to 'discomfort' with an acceleration of the life movements at its disposal—sucking, swallowing, heartbeat, kicking. What is the relation of such accelerated behavior to anxiety? This is not the more or less organized anxiety pattern which we are used to thinking of as the anxiety reaction, to be sure; but do not these responses indicate an earlier form of anxiety-like response of separate or loosely constellated reflexes? I realize here that I run the risk of encroaching on the domain of neurology and reflex reactions, and on the field of biology which describes anxiety-like (frantic) behavior in lower animals and even insects. So I must retreat again to an attitude of inquiry.[2]

II

When we examine (vicariously) the behavior of the newly born infant (according to Watson's studies made in 1918–1919), we find three types of emotional reaction, described by Watson as 'fear,' 'rage' and 'love.' The behavior which Watson describes as a 'fear' response is 'a sudden catching of the breath, clutching randomly with the hands, sudden closing of the eyelids, puckering of the lips, then crying.' These responses are present at birth. Watson found no original 'fear' of the dark, and postulated correctly that later fear of the dark in older infants was due rather to the absence of familiar associated stimuli. The conditions which he found capable of producing a 'fear' response were: (1) sudden removal of all means of support, *i.e.*, dropping the child, or this same condition in a lesser degree—namely the pulling or jerking of the blanket or the sudden sharp pushing of the infant itself when the child is falling asleep or just awakening, and (2) loud sounds made near the child. Thus we see here a response (with the addition only of the cry) similar to the one which presumptively is called forth *in utero,* and provoked by the reversal of the most favorable mechanical features of intrauterine life, namely, the full support of the fœtus, and the presence of a shock-absorbing fluid pad. The reaction to noise both in intrauterine life and immediately after birth raises the interesting problem as to whether this is real hearing or whether it is a tactile reaction to vibration. In favor of its being a reaction to actual hearing are the facts that embryological research has shown that the ear is functionally complete in anatomical structure and nerve supply long before birth, and that many clinical observations of prematurely born infants indicate that they are almost uniformly hypersensitive to sound; also that fœtal reactions are greatest when this sound stimulus is applied over the fœtal head. Of this reaction to sound I shall have more to say later in the paper. It seems possible in fact that the intrauterine situation in which the fœtus is surrounded by water may furnish conditions in which sound is actually magnified: that is, the amniotic fluid may absorb mechanical shock but amplify sound.

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[2] In the chapter on Analysis of Anxiety (*The Problem of Anxiety,* pp. 105–107) Freud postulates a kind of anxiety signal which is different from the anxiety reaction itself, but sees the first as derived from the second, the latter being operative in the development of the actual neuroses, the former of the psychoneuroses. 'But when it is a matter of an "anxiety of the id," one does not have so much to contradict this as to emend an infelicitous expression. Anxiety is an affective state which can of course be experienced only by the ego. The id cannot be afraid, as the ego can; it is not an organization, and cannot estimate situations of danger. On the contrary, it is of extremely frequent occurrence that processes are initiated or executed in the id which give the ego occasion to develop anxiety; as a matter of fact, the repressions which are probably the earliest are motivated . . . by such fear on the part of the ego of this or that process in the id. We have good grounds here for once again distinguishing the two cases: that in which something happens in the id which activates one of the danger situations to which the ego is sensitive, causing the latter to give the anxiety signal for inhibition; and that in which there develops in the id a situation analogous to the birth trauma, which automatically brings about a reaction of anxiety. The two cases are brought into closer approximation to each other if it is emphasized that the second corresponds to the initial and original situation of danger, whereas the first corresponds to one of the anxiety-occasioning situations subsequently derived from it. Or, to relate the matter to actually existing disorders: the second case is that which is operative in the ætiology of the "actual" neuroses, the first is characteristic of the psychoneuroses.' What I am suggesting sounds as though it were comparable to this distinction, but it is really quite at variance with it.

The behavior which Watson characterizes as 'rage' is indicated in the newborn infant by 'stiffening and fairly well-coördinated slashing or striking movements of the hands and arms. The feet and legs are drawn up and down; the breath is held until the child's face is flushed. These reactions continue until the irritating situation is relieved, and sometimes beyond. Almost any child from birth can be thrown into rage if its movements are hampered; its arm held tightly to its side, or sometimes even by holding the head between cotton pads.' Here I would emphasize that this behavior appears as an aggressive reactive response to situations which are at least faintly reminiscent of the recent birth experience, in which the child was perforce helpless and the victim.[3]

Watson designates as 'love' the response characterized by cessation of crying followed by smiling or gurgling, but does not differentiate between a positive pleasure gained and relative pleasure from relief of fear or discomfort. This pleasure response he sees produced as the result of stroking, tickling, gentle rocking, patting and turning upon the stomach across the nurse's knee. I do not know that it is necessary to comment further upon this here. These behavior reactions of newborns described by Watson would appear then as centrifugal and centripetal responses possibly correlated with disturbances of intrauterine life in the case of 'fear,' and with prolonged or difficult birth processes in the case of 'rage.' This is too schematic, however, and I shall presently be in danger of overemphasizing a contrast beyond its value. Certainly in most instances they would combine and reënforce each other. In brief then, I would raise the question of a preanxiety intrauterine response to (threatening) stimuli, consisting of reflex oral, muscular, cardiac and possibly prerespiratory reactions. This precedes the anxiety pattern established by the birth trauma, and probably augments it. It is inconceivable to me that there should be much psychic content to this, and it may indeed be the stuff of which blind, free floating, unanalyzable anxiety is constituted—sometimes adding just that overload to the accumulation of postnatal anxiety which produces the *severe* neurotic.

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[3] Watson's division of the behavior into 'Fear' and 'Rage' has been questioned by other writers. I am concerned here, however, with the actual observations, rather than with his theoretical designations. While there is a considerable literature also on the related phenomena of the Morro reflex and the startle pattern in infants and adults, I do not wish now to become involved unnecessarily in these questions. From going over a number of reports in the literature it seems that reactions of newborns to loud sound and to loss of support are generally observed while the active reaction to confinement of motion is less constant. (Some writers describe the slashing rage-like movements only in some babies, while other babies show a quieting of activity.) This suggests to me that such behavior of the newly born babies varies, perhaps according to the pressure and firmness with which the infant is held, intense pressure producing the active 'rage-like' reaction; lighter holding pressure falling in the same category as patting, stroking, supporting stimuli, provokes the quieting response which Watson designated 'love.'

There is one other phenomenon sometimes associated with birth to which I would now call attention: the frequent appearance in male babies of an erection immediately after birth. (In a subsequent paper I shall have something to say regarding the corresponding reaction in the female.) Although this phenomenon has been frequently observed clinically, I am under the impression that systematic studies of its occurrence are lacking. It has mostly been observed and then passed by. There is a possibility, however, that its occurrence immediately following birth is not merely coincidental but is the result of stimulation by the trauma of birth itself. In a verbal communication from one of the obstetricians on the New York Hospital staff, I learned that erections in male babies are not the rule but are by no means rare. The erection is usually present immediately after birth. As this man described it, 'I turn the baby over, and there it is. I have to be careful not to clamp the penis in with the cord.' It had never occurred to him to consider the cause of these very early erections and he had no idea whether they were in any degree correlated with birth traumata or prolonged births. Again I ask, is there any correlation of such birth erections with anomalies or disturbances of the birth process resulting in more than the ordinary—and presumably benign—sequela of tension?

That extreme emotional excitation may be accompanied by an orgasm even in adults has also been noted[4] and is in line with Freud's early conception of the overflow of dammed up libido. Cannon, approaching the same phenomenon from a physiological angle, says in discussing this, 'Certain frustrations which bring about strong emotional upheavals characteristically energize at least some parts of the parasympathetic division. . . . Great emotion, such as is accompanied by nervous discharge via the sympathetic division, may also be accompanied by discharges via the sacral fibres. . . . The orderliness of the central arrangements is upset and it is possible that under these conditions the opposed innervations discharge simultaneously rather than reciprocally.' Later he states that 'any high degree of excitement in the central nervous system—whether felt as anger, terror, pain, anxiety, joy, grief or deep disgust—is likely to break over the threshold of the sympathetic division, and disturb the functions of all organs which that division innervates.'

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[4] Köhler, in his observations on chimpanzees, noted that any very strong emotion 'reacted on the genitals.' (*The Mentality of Apes.* New York: Harcourt, Brace and Co., 2nd Ed., 1927. p. 302.)

Mrs. Margaret Blanton, in some observations on the behavior of the human infant during the first thirty days of life, published as far back as 1917, noted that erections occur immediately after birth, and mentioned specifically erections in four different babies whom she studied. Although this study meticulously and objectively recorded the infant behavior, even measuring the angle of the erection, it is unfortunately of little value for our purpose as no systematic record of the behavior in relation to the infant's biography to date is given; nor was the total number of infants observed specifically mentioned, leaving us thus in the dark as to the frequency of the observation. Mrs. Blanton made some other interesting and rather striking observations, however, which may possibly fit in with and certainly do not contradict the line of my questioning. She noted sneezing as occurring even before the birth cry. Strong rubbing (in contradistinction to patting or stroking—the rubbing, for instance, of the first real cleansing of the body) is accompanied, she says, by the most intense screaming and rage-like reaction that the infant showed at any time during this first month of life. The screaming is most intense of all when there is vigorous rubbing of the scalp and of the back. I would point out here that these are obviously the areas of body surface which have been exposed to trauma during the birth process. She also remarks that the kinesthetic sense is probably the earliest developed of all the senses, appearing, as may reasonably be supposed, before kicking does in the fourth or fifth month. (What is the basis of this conclusion?) She quotes Miss Millicent Shinn (Notebook No. 2) as referring to the quieting influence of monotonous jarring as compared with smooth motion. Mrs. Blanton observed that walking with a baby quiets it even on the first day, and that in her experience, babies almost never cried when being carried through the hospital corridor. This too seems to support Ferenczi's and Freud's suggestion of the practical continuum of fœtal and postnatal life; for the fœtus has, in fact, been accustomed to being carried for nine months subject to the rhythmical motion of the mother's walking.

In regard to finger sucking, Mrs. Blanton enumerates a number of instances occurring almost immediately at birth, the hand to mouth movement being so well established as to leave little doubt that it had already been established earlier. Here again we regret the lack of a systematic recording of the observations for each child. She indicates, however, that the finger sucking was sometimes especially strong in otherwise weak or disturbed infants. 'One baby (a blue baby) two hours old, put fingers directly into the mouth. Another, a cæsarian delivery, very feeble, was seen sucking two fingers so vigorously, it required a decided effort to remove them. She [the infant] put them back at once without trouble. . . . Another, a malformed baby [type of malformation not specified], at ten days and in a dying condition, put finger in his mouth after four trials, and the sucking reflex was moderately good.' This is circumstantial evidence, to be sure, but it is especially interesting that these are the instances specifically noted.

I have recently come upon some further observations from a psychological laboratory which are somewhat supportive, though not conclusive, of the suggestions I have indicated. This is the experimental work of Dr. Henry M. Halverson of Yale. Dr. Halverson studied reactions of ten male infants, varying in age from one to forty-three weeks, who were subjected to various nursing situations. Here again the observations are mitigated for our purpose by the psychological interest in the experiment rather than the infant. Even so, Dr. Halverson's results are extremely interesting to us. He observed erections of the penis occurring quite frequently during some nursing situations; actually sixty times in two hundred and twelve different situations of eight different types.[5] It is first to be noted that the erections took place characteristically (with the exception of the first situation) in situations in which there was some frustration in the nursing—delay, difficult nipple, removal of breast or nipple. There were three situations in which there was an especially high frequency of erections in proportion to the frequency of the situation: (1) in sucking at a difficult nipple, where erections occurred twenty-four times in twenty-nine such situations; (2) on removal of the breast (prematurely), where erections occurred ten times in fifteen such situations; and (3) during sucking at an empty (air) nipple, where erections occurred thirteen times in thirty-nine such situations. On the other hand an erection occurred on removing the difficult nipple only once out of twenty-nine such situations. (Chart 1.) Halverson does not make clear whether this single instance was in an infant who had had no erection during the nursing on the difficult nipple but had developed one on its removal, or whether one of the twenty-four infants was doubly stimulated by frustration: first by the difficulty of the nipple, and then by the removal of even this modicum of sucking comfort. Halverson also remarks that erections never occurred during sucking at the breast or at an easy nipple. The appearance of tumescence, according

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[5] The eight type situations were: (1) when the infant was being carried by the nurse, (2) two-minute delay in feeding, (3) breast removed, (4) easy nipple removed, (5) sucking at difficult nipple, (6) difficult nipple removed, (7) sucking at empty nipple, and (8) empty nipple removed.

Chart 1

FREQUENCY AND NUMBER OF ERECTIONS	Frequency of Situation	No. of Erections
1. Infant carried or held by nurse	29	3
2. Two minute delay in feeding—gripping pressure only	29	5
3. Breast removed	15	10
4. Easy nipple removed	3	1
5. Sucking at difficult nipple	29	24
6. Difficult nipple removed	29	1
7. Sucking at empty nipple	39	13
8. Empty nipple removed	39	3
Total	212	60

(from Halverson)

to Halverson, 'occurred decidedly most often associated with vigorous body movement, and fluctuating gripping pressure with the infant quiet or quieting.' In other words, the tumescence was associated with a general reaction to the frustration and did not appear as an isolated phenomenon.

The author also correlated the situations of the appearance of tumescence with those of detumescence. (Chart 2.) This brings out some

Chart 2

FEEDING CONDITIONS UNDER WHICH ERECTIONS OCCURRED	FEEDING CONDITIONS UNDER WHICH ERECTIONS DISAPPEARED										
	Sucking at easy nipple	Breast restored	Weak sucking and mouthing	Resting and mouthing	Sucking air	Resting	Sucking at own bottle	Nipple removed	Sucking at difficult nipple	Weak sucking	Infant removed
Sucking at difficult nipple	10	..	2	4	2	2	1	1	2	..	..
Sucking air	1	..	3	1	1	2	1	..	1	1	1
Withholding breast	1	9	..	..	..	..	..	..	..	..	..
Delayed feeding—gripping pressure only	1	..	..	..	1	..	3	..	..	..	..
Delayed feeding—held by nurse	..	..	..	..	..	1	1	..	..	..	..
Sucking air—nipple removed	1	..	..	1	1	..	..	..	..	..	..
Easy nipple removed	1	..	..	..	..	..	..	..	..	..	..
Difficult nipple withheld	..	..	..	..	..	..	..	..	1	..	..

(from Halverson)

striking findings: viz., that in ten instances where erections occurred in sucking at a difficult nipple, they disappeared when an easy nipple was given; and in nine cases where erections occurred when the breast was withheld, they disappeared when the breast was restored. These findings seem outstanding, as they indicate the importance of frustration excitement in the situation of tumescence. Halverson again summarized the behavior as follows: 'Tumescence is accompanied by restlessness, frequent fretting or crying, marked alterations in muscular tension and vigorous body movements, most of which have no connection with sucking activity. Detumescence is accompanied by general quiescence, during which the muscles may be relaxed or *in a state of sustained tension*' (p. 412). (The italics are mine, as I would emphasize here that this might appear then as a residual tension, or paradoxically, comparative relaxation.) The author believes that erections are probably quite common from birth, but are not observed because of the presence of clothing and the general taboo against noticing this phenomenon.

While these results of Dr. Halverson's experiments are harmonious with the asumption of anxiety even to the point of accumulation and a general overflow, any evidence of the association of any such susceptibility to discharge of anxiety or the possible correlation of it with the disturbances of the prenatal, natal, or very early postnatal experiences is lacking, as the experimenter made no effort to view his material from this angle. Here, however, is a useful field for observation if the cooperative interest of the obstetrician and the pediatrician can be obtained; and while we still lack direct observations (which Freud so earnestly wanted) as to the effects of difficult birth, this nevertheless seems possible, and even a step nearer of attainment.

There are two other groups of observations in fields adjacent to psychoanalysis that contain facts of some relevance to the problems I have been discussing: (1) pathologicoanatomic evidences of the degree of trauma resulting from birth or conditions associated with birth; (2) clinical observations on very young, prematurely born children.

Concerning, first, the pathologicoanatomic evidences of trauma occurring at birth, there are many facts available. The mass of evidence is that *cerebral injury resulting from birth is very much more common than one might suppose.* There is an excellent review of this subject in a monograph by Ford published in 1926, from which I shall select some findings pertinent to our problems. While the study indicated that birth trauma did *not* play the etiological rôle in the spastic paraplegias and hydrocephalus that had been assigned to it, the secondary implications of the study are important. The pathologicoanatomic study was made of course on the dead victims of the birth struggle; but the author notes, 'There is some evidence that intracranial hemorrhage occurs in babies who survive and may even show no clinical signs of (gross) birth injury. . . . Old blood pigment is found in the meninges of babies up to the ninth month even where there is no (clinical) evidence of injury at birth.' Routine lumbar punctures done within a few days after birth show modified blood in the cerebrospinal fluid in a surprising number of instances without clinical indications of trauma.[6] Please do not think that I am implying that anxiety comes from blood in the meninges. I emphasize these facts simply because such a finding is a positive indication of one kind of trauma associated with birth and is in some measure an index of the degree of trauma occurring.

The same study also gives evidence that injury to the cerebrum, even to the extent of petechial hemorrhages in the white matter, results not so much from the trauma of the birth process as from asphyxia and strangulation which may occur with birth and may also occur in some degree through circulatory disturbances if the cord is caught around the fœtal neck *in utero.*

Other pathologicoanatomic findings of note are evidences of disturbances of intrauterine life which leave gross effects on the fœtus, without any clinically observable disturbances in the maternal health. Some fœtal disturbances formerly thought to be due to defects in the germ plasm or to accidents at birth are evidently caused rather by local fœtal illness. We are quite used to the idea that the fœtus may suffer from systemic maternal disease; but it is pointed out (by Ford and Dandy) that in hydrocephalus, in which mechanical birth trauma was previously thought to play an important part, examination reveals adhesions and structural changes of meningitis resembling closely those found in meningococcus meningitis in adults, and that such occur without being associated with any history of maternal illness. There is further evidence of a very high incidence of intracerebral hemorrhage in prematurely born babies where the effect is not so much due to the pressure of labor as to the state of unpreparedness for extramural life of the tissues of the infant at the time of birth. Much greater sensitivity of the skin and fragility of the cutaneous and retinal vessels have been demonstrated in prematurely born babies than are found in the infants born at term.

It is well known that infants born without any cerebral hemispheres[7] may, none the less, carry out all the normal early activities, including sucking and crying. Evidently then, these may exist at first entirely at a reflex level. Severe cerebral injury, however, seems to add signs of cortical irritation: localized twitchings and convulsions.

These findings seem to me important as indicating the frequency, the

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[6] Ford quotes a report of blood in 14% of the cerebrospinal fluids obtained by routine lumbar puncture following birth in 423 colored babies. Only 6% of these babies had shown any clinical evidence of cerebral lesion, and less than 3% died.

[7] Two such infants were born at the Johns Hopkins Hospital during the ten years I was associated with that hospital; numerous other instances have been reported elsewhere.

r-reaching effects of birth trauma and of the varia-
process. They suggest the possible intensification of
the anxiety pattern at birth at a reflex level and in
ychic content. How this psychic content may later
ut of dawning self-awareness during the first months
life, and partly elaborated through and coalescing with
rth theories of the young child with contributions from
hears regarding his own birth—this I hope to consider a
definitely in a subsequent paper dealing with the clinical
n some cases of severe anxiety hysteria.

rveying the clinical observations on young prematurely born children, we find interesting facts. There are two particularly important studies of behavior, one by Shirley at the Child Development Center in the Harvard School of Public Health, the other by Mohr and Bartelme in Chicago. Neither of these gives us the very early day by day observations we desire, but they at least present some controlled observations. Shirley's report is the more valuable to us because it includes observations on sixty-five infants made periodically from three months to five years, while the other studies include fewer very young children. Shirley states that young prematurely born children (those up to the age of two and one-half years) were much more keenly aware of sounds and very early seemed more interested in their meaning than full term babies of the same age. They were distracted by footfalls, voices, and incidental noises. Older prematures (those in the two-and-one-half to five-year-old group) often manifested the 'hark' response, stopping in their play and whispering in a startled voice, 'What's that?' at the hiss of a radiator, the chirp of a cricket, or the dropping of a paper. Premature babies were more fascinated by a yellow pencil used in the test than were full term infants. Yellow objects were definitely preferred to red ones, and this preference for yellow seemed in many instances to persist through the early years. Premature babies seemed also to be more keenly aware of ephemeral visual phenomena like shadows, smoke plumes, dancing motes in a sunbeam, or reflections thrown by a mirror. The observer thought, however, that this visual-sensory sensitivity was less marked and less easily checked than the other characteristics she noted. Although premature babies seemed to respond as well as 'normal' babies in comprehension of speech and in making attempts to imitate words, they had more difficulty in achieving correct pronunciation, persisted longer in baby talk, and showed substitutions of letter sounds. (Mohr and Bartelme reported a higher percentage of stammerers in older prematures.) In general, prematures showed difficulty in manual and motor control. They had difficulty in pointing, showed tremors readily, spilled and scattered objects, and frequently went 'all to pieces' after making especially sustained efforts at manual manipulation. They were delayed in walking and tended to be clumsy. In activity, they went to extremes, tending to be soggy and inert or to be overactive and distractible, and had short spans of attention. In the older group (two and one-half to five years of age) these children might continue to work or play 'at a high level of interest and concentration until they collapsed in rage from fatigue and frustration.' The author also notes that premature children stood out above others in the desire to create artistically (especially through drawing and painting), although they were conspicuously less able, because of their poor motor coördination, to produce very effective results. The emotional responses of the prematures were noted generally to be volatile, with marked petulance, irritability, shyness, and a tendency to explode in a panic or a tantrum. There was a greater incidence of enuresis and day dribbling in the prematures than in others. The author submits no findings about thumb sucking, but Mohr and Bartelme reported that more than 20% of their group showed thumb sucking which persisted beyond twenty-eight months of age. In an attempt to make a quantitative study of these characteristics, Shirley made observations of premature infants comparing them with an equal number of observations of infants born at term. Here are three tables adapted from her report:

CHART 3

CHARACTERISTICS SHOWN IN TEST SITUATIONS

Age group (6–24 months)	50 Prematures	50 Controls
Interest in yellow pencil	16	0
Distraction by sounds	36	6
Throwing toys around	30	6
Banging and slapping toys	20	10
Trembling and shuddering	18	10
Hesitate to touch toys	10	12
Comprehend but refuse to perform	18	8
Seek adult help	22	6

(from Shirley)

CHART 4

CHARACTERISTICS SHOWN IN TEST SITUATIONS

Age group (2½–5 years)	22 Prematures	22 Controls
Very distractible	45	13
Distracted by sounds	18	4
Short attention span	13	9
Trembling	9	4
Throwing toys around	13	9

(from Shirley)

CHART 5

CHARACTERISTICS MANIFESTED DURING PLAY PERIOD

Age group (2½–5 years only)	30 Prematures	30 Controls
Remarks about unusual sounds	67	37
Speech difficulties	60	23
Crying in play room	80	57
Rapid change from toy to toy	43	23
Jittery—nervous	83	27
Bowel movement during play	40	30
Five or more urinations	27	12

(from Shirley)

Although these findings by Shirley, some but not all of which have been confirmed by other observers, deal predominantly with children already old enough to be surrounded by complicated life situations possibly outweighing the single factor of prematurity, the picture gives the impression of markedly increased infantile anxiety. How much this is due to the discrepancy between the earlier time development of sensory sensitivity and the later motor coördination, and how much it may be due to the traumatic factor, is not clear.

To summarize, (1) there is evidence of the possible existence of a preanxiety reaction occurring in fœtal life, consisting objectively of a set of reflex reactions; (2) there seems to be an increase in the intensity of such responsiveness occasioned by the presence of untoward conditions of the prenatal, natal, or immediately postnatal period, such an increase presumably leaving a kind of deepening of the organic stamp in the pattern of response; (3) it seems evident that this preanxiety response is, in the fœtal period, devoid of psychic content and probably is to be regarded as pure reflex whereas the birth experience, especially where there is severe trauma, would seem to organize the scattered responses of the fœtal period with the addition of the birth cry and what it entails, into the anxiety reaction of which birth itself has been considered the prototype; (4) although the prenatal period is, as Ferenczi pointed out and Freud emphasized, practically a continuum with the postnatal life, the cæsura of birth has not only the organizing effect of a single momentous event, but it also marks the threshold at which 'danger' (first probably in the sense of lack of familiarity) begins to be vaguely apprehended and it is therefore the first dawn of psychic content.

There are other problems which suggest themselves along these lines. There is first the question of whether an increased overload of preanxiety, something felt presumably as simple organic tension, is capable of producing a diffuse overflowing reaction including at one and the same time oral, sphincter, and genital stimulation at a reflex level. Further, is it possible that chance touching of the mouth by the hand may produce a premature oralization on the basis of the very earliest autoerotic response tending to promote relaxation of tension? Again, is similar specialized sensitization possible in the case of other zones, anal and genital? We ask, in other words, whether repeated accumulated simple organic tension of the fœtus, diffusely discharged, might not deepen reflex response reactions in a way which would anticipate and tend to increase the various later polymorphous perverse stages; or whether some libidinal phase, probably most frequently the oral, might not be accentuated by being anticipated in fœtal life, and a preliminary channelization for discharge established.[8]

III

I am quite aware that these borrowed observations are by no means conclusive, and that it may justly be said that I am conjecturing. Having committed myself thus far, however, I shall go further and ask, 'What might be the effect of such early increase in the anxiety potential, provided this does occur, on infantile narcissism?'

Now narcissism is difficult to describe or define. It is, one might say, the great enigma of life, playing some part at one and the same time or in alternating phases in the drag of inertia and in the drive to the utmost ambition, and contributing its share to the regulating function of the conscience. Freud speaks of the 'narcissistic libido' of the fœtus, in the passage already quoted, and suggests that its gross economy is disturbed by birth. We can hardly think of the fœtal narcissistic libido being more than a degree of sensitivity and susceptibility to stimulus, bringing about the response which I have characterized as the reflex antecedent of the later anxiety response. Freud speaks elsewhere of narcissism as the 'libidinal complement to the egoism of the instinct of self-preservation, a measure of which may justifiably be attributed to every living creature.' This is an extremely significant statement, for it implies that narcissism is coincident with life throughout and that narcissistic libido is in fact to be found wherever there is a spark of life. We can readily see then, that there is a peculiar complexity to the conception of narcissism in the fœtus which occupies a unique position between individuation and functioning as part of a whole larger than itself. Practically, however, we would think that in the fœtus the narcissism is reduced to its simplest terms, being almost or entirely devoid of psychic content. I can only think that the disturbance of the gross economy of fœtal narcissistic libido which occurs at birth is just this: some transition from the almost complete dependence of intrauterine life to the very beginnings of individuation, at least to the quasi-dependence outside the mother's body instead of the complete dependence inside. That this transition is accomplished with a marked increase of tactile, kinesthetic, and light stimulation seems evident.

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[8] Gesell and Ilg (*Feeding Behavior of Infants.* New York: J. B. Lippincott, 1937) quote Minkowski as eliciting an oral reflex associated with movement of the leg when lips were stroked in a fœtus at the beginning of the second lunar month of intrauterine life. Opening and closing of the mouth appeared as a discrete local reflex at about the eighteenth fœtal week. They conclude that 'it is safe to say that many of the elementary neural and muscular components of sucking and deglutition are prepared as early as the third or fourth month. . . . Even the hand to mouth reaction is anticipated in utero.' (p. 15) Gesell notes (p. 123) 'that more boys than girls are thumb suckers; and also that thumb suckers are good sleepers, but otherwise are inclined to be more rather than less active and given to sudden fatigue.'

There are some attributes, derivatives or forms of postnatal narcissism with which we are familiar under whatever names: (1) the sense of omnipotence with its derivatives; (2) the overvaluation of the power of the wish and (3) the belief in the magic power of words; (4) the mirroring tendency, derived partly from primary narcissism and partly from an imperfectly developing sense of reality, the two in fact being hardly distinguishable. It seems to me quite evident that an increased early infantile anxiety can be expected to be associated with a complementary increase in the infantile narcissism (cf. Freud's statement quoted above); that in fact excess narcissism develops as part of the organism's overcoming of the excess anxiety before it can function even slightly as an independent unit in the environment. We might figuratively refer to the simplest primary narcissism in its relation to anxiety as surface tension which may be great or little according to the organism's needs. It is evident that in the birth experience the cry of the newly born infant is the main addition to the prenatal activity, and while it seems largely determined by reflex responses, it is quickly assimilated into behavior both as a primitive emotional expression and a call for attention. That this latter function continues to be utilized in a way to materialize or substantiate omnipotence need hardly be remarked. The cry, in one sense, is the simplest forerunner of speech, though originally appearing as a simple discharge of nervous excitation.

In this paper, I am not concerned with the vicissitudes of speech development other than to point out that the belief in the magic power of words is probably in line of descent from the utilization of the cry of rage at birth.

The 'mirroring' part of narcissism I believe has its simplest beginning in the incomplete psychic differentiation of the infant from its surroundings, which now include the mother—in the change in fœtal narcissistic libido economy entailed in beginning individuation, in the pinching off of the amœbic pseudopod, to use a homely biologic metaphor. I am inclined to believe that this involves dim psychic content from the time of birth, content which is closely related to and dependent on vision, and which develops almost as early if not coincidentally with the cry as a means of communication. Mrs. Blanton noted that a large percentage of babies fixate on light at birth; other authors have noted that even within the first few weeks babies seem to have some recognition of a familiar face and cry when confronted with an unfamiliar one. I am inclined to believe that probably quite early this tendency to cry, i.e., to show an anxiety response to the unfamiliar, becomes augmented by another factor, something which I would characterize as a kind of visual and kinesthetic introjection of those around the infant. The child reacts with a puckered, worried or tense expression when people around are cross or gloomy. This may come about through an association of mild discomfort (the restricting, frustrating sensations of being held or handled by a tense and jerky nurse or mother) with the gloomy expression which it sees; nevertheless the infant soon seems to make the connection directly, an anxious nurse being reflected in an anxious baby without the intermediate kinesthetic link. This is an observation of which sensitive nurses are quite aware. This is a kind of centripetal empathy; perhaps introjection still remains the best word. At any rate I believe that babies vary greatly in this obligatory capacity to reflect those around them, and that it is the tense, potentially anxious infant that is the most sensitive reflector. This may, indeed, have something to do with the peculiar clairvoyant quality sometimes encountered in severe neurotics, and may be even more closely related to the marked facility of identification in severe hysterics who so readily assume the symptoms of those around them.

The infant's developing adaptation to the outer world soon proceeds, however, beyond this introjective stage to a more definite sensing of the environment as separate from itself, involving in this, however, oscillations between introjection and projection. In Freud's article 'Negation,' he described the preliminary ignoring of reality as a transition stage in its acceptance, and stated that acceptance itself implies a second stage of verification—the perception that the unpleasant experience is *really* true. Freud says in this paper, 'The first and most immediate aim of testing the reality of things is not to find in reality an object corresponding to the thing represented, but to *find it again,* to be convinced that it is still there.' This is certainly familiar enough in the experience of adult life when one sees some particularly shocking sight: there is an initial anxious tendency to block it out, and only by actually reviewing it or recalling it visually is it finally assimilated as a fact. This is, indeed, the familiar abreaction. All this is discussed in Ferenczi's paper On the Acceptance of Unpleasant Ideas, as well as in his earlier one (1913) On Stages in the Development of a Sense of Reality, in which he endeavored to show also that the fixation point of the psychoses occurs at this stage. Now this touches what I have thought about the severe neuroses: that where infantile predisposition to anxiety is great due to an overload of potential in the prenatal, natal, or immediate postnatal experience or the combination of this with constitutional factors, new anxiety occurring at this period might pull down the whole load as it were, and by its peculiar paralyzing effect on the organism, impair the sound synthesis of these two stages of reality. Such patients often have, in fact, an extraordinarily clear and vivid visual representation of reality, but one which is insecure and easily dislodged. This disturbed or fragile sense of reality is observed clinically in connection with the too easy identification of such patients with those around them. They are hunting eternally for satisfactory and secure models through which they may save themselves by a narcissistic identification. On the surface it appears later as a scattered, superficial pseudo competitiveness.

While I have laid considerable emphasis in this paper on the possible exigencies of intrauterine life and the trip through the birth canal, I believe that severe traumata occurring during the first weeks of postnatal life would have a comparable effect. I would again emphasize that I see these factors as producing a *predisposition to anxiety* which combined with constitutional predilections might be an important determinant in producing the severity of any neurosis; for such anxiety is a burden, ever ready to combine with new accesses of anxiety later on in childhood and throughout life.

I know that in presenting this paper, I run some risk of being misunderstood. It is possible that the same human tendency to which Freud refers (in the footnote at the beginning of the article on the Dynamics of Transference that I have already quoted), the tendency to narrow the conception of causes to a single cause, or to single out only one adversary to be attacked, may cause some to conclude that I am just dusting off and reviving the birth trauma theory with slight modifications and an intrauterine embellishment, and that I am thereby avoiding dealing with the events of the first few years of life. This is not my intention. If I did so, I should be reducing treatment to a very fatalistic management basis—little better and no deeper than therapy by adroit management of the current situation of the patient which, to be sure, is so often necessary in psychiatric practice. I hope that by bringing this possible misconception to the fore in advance, I may at least partially forestall it. In a later paper I shall present some clinical material with a statement of what I have found useful in treatment of these especially severe neuroses. I shall indicate the ways in which I believe this excess narcissism and anxiety may be managed during the course of analysis—the ways which must be used, in fact, in order that a 'regular' analysis dealing primarily with the disturbances of libidinal development may proceed. Certainly the excess of narcissism in these cases is the presenting and terrifying problem to the analyst. But I am inclined to think that the narcissism can be educated sufficiently, if it is carefully done, to permit the patient to stand the pain of the analysis, provided that due heed is given at the same time to the blind anxiety which is the cornerstone of this insecure character structure. Much can be salvaged for such patients, many of whom are talented, intuitive people.

SUMMARY

Freud considers that anxiety is the reaction to danger, and that birth is the prototype of the anxiety reaction. He sees this, however, as operating through the assimilation into the constitution (genetically) of the endless procession of the births of our forefathers. He doubts the importance of the individual birth experience in influencing the quantum of the anxiety response, largely because the birth experience is without *psychological* meaning; at the same time, nevertheless, he emphasizes the continuity of the intrauterine and the postnatal life.

From the various experimental and clinical observations cited, the question arises whether we may not look at this in a different way. The anxiety response which is genetically determined probably manifests itself first in an irritable responsiveness of the organism at a reflex level; this is apparent in intrauterine life in a set of separate or loosely constellated reflexes which may become organized at birth into the anxiety reaction. How much this total reaction is potentially present but not elicited before birth, and how much birth itself may, even in the individual life, play a reënforcing or an organizing rôle, is not clearly determinable at present. Certainly, however, 'danger' does not begin with birth but may be present earlier and provoke a fœtal response which is inevitably limited in its manifestations and exists at an organic rather than a psychological level. Variations in the birth process may similarly increase the (organic) anxiety response and heighten the anxiety potential, causing a more severe reaction to later (psychological) dangers in life. Painful or uncomfortable situations of the earliest postnatal weeks, before the psychological content or the means of defense have been greatly elaborated, would similarly tend to increase the organic components of the anxiety reaction.

Observations on the special reactions of the fœtus in intrauterine life and at birth give rise to new questions as to the effect of these on the later libido development. Further, where there is an increase in the early anxiety there is an increase in the narcissism. This situation favors an inadequate development of the sense of reality and furnishes additional predisposition to the development of especially severe neuroses or borderline states.

4

THE CHILD'S RESPONSE TO COERCIVE BOWEL TRAINING *

by

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PSYCHOANALYSTS engaged in the treatment of children are frequently confronted with clinical material in which the framework of neurosis stands out very clearly. This being the case, it would seem that the psychopathology of childhood offers a particularly important field for research and that systematic studies conducted by analysts in this area should eventually contribute to a better understanding of the neuroses. With this orientation, I should like to present some data from two clinical sources: first from the analysis of a 3½-year-old child whose presenting symptom was obstinate constipation and second, from a study of the management of bowel training in a group of 213 so-called problem children.

DATA FROM THE ANALYSIS OF A CHILD

Method: We deal with the analysis of a 3½-year-old boy studied in daily treatment sessions of one hour's duration six times a week for two and one-half months. Treatment through the medium of play was employed, the analyst's office being equipped with toys related to a child's daily living, *e.g.* small dolls to represent people, household furniture and utensils, animals, and conveyances such as trains and automobiles. Also at hand were modelling clay and a small tub of water. At the window was an aquarium of goldfish and snails, as well as a Japanese dirt garden which became incorporated in the play. As far as possible the initiative in choosing a toy for play was left entirely to the child and except in two or three instances the physician offered no interpretation during the entire analysis. The exceptions occurred at the height of the child's hostility to the analyst when he started to strike or kick her. On these occasions he was asked if this meant he would like to punish his mother. His response was to discontinue his attack.

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Anamnestic data: The boy was brought to analysis as a last resort because of a long history of constipation which had failed to respond to other therapeutic measures. He was the older of two children, the younger being a girl of 1½ years. The father, an intelligent, cultured man, with considerable ability in music and a successful producer in the field of drama, was under psychoanalytic treatment at the time the child was referred and was characterized by his analyst as "narcissistic." In my one interview with him he was pleasant, at ease, tolerant and objective in discussing the difficulties of the child. The mother, a petite, superficially gracious intellectual, was very tense; she obviously rejected the child and she was the type who quietly but relentlessly dominated those about her.

In giving the history, the parents stated that the child had always been "regular" with respect to his bowel movements until the age of 2½ years. At that time his nurse, who had cared for him since birth, and to whom he had been devoted, returned to her home in England. One week before she left he became constipated and he had remained so ever since, failing to respond to medical treatment although he had been under the care of, one after the other, three excellent pediatricians. Dietary measures, various cathartics, and atropine brought only temporary relief from the symptom, the longest period being three weeks. The child had sometimes gone five or six days without defecating. When he was referred for analysis he was having no bowel movement except when one was effected by an enema. This he was given every four days and he fought it so bitterly that it required the combined forces of mother and nursemaid to handle the situation.

At the time the question of analysis arose the attending pediatrician had advised hospitalization for examination under anaesthesia to settle the question of a possible internal fissure and to stretch the anal sphincter. Before consenting to these measures, the father decided upon trying a psychoanalytic approach to the problem. The pediatrician, who telephoned at the time of referral, said the child had a very tight sphincter which might be "voluntary, neurological or anatomical," and that X-ray showed a "tremendous sigmoid," that the roentgenologist wished to make a diagnosis of Hirschsprung's disease. She concluded by saying she thought it "quite a psychiatric burden to cure a megacolon," but she expressed a willingness to cooperate.

In telling about the child's presenting symptom, the parents remarked incidentally that he also had a difficult personality. He was unhappy, petulant, irritable and exceedingly stubborn, these characteristics being precipitated by the birth of his sister which occurred when he was two years old. As the father put it, "The little fellow sometimes acts as if he hates the whole world."

With regard to development, it was learned that in infancy there was difficulty with feeding. The child took the breast well but because the supply of milk was inadequate, got only about three ounces at each feeding. Complementary feeding was therefore necessary. The mother said she disliked the nursing experience, the nurses making her feel inferior because she had so little milk. The child never seemed satisfied, and at three months he was taken off the breast altogether and fed by bottle. Although slow at emptying the bottle, he took it fairly well, and he seemed happier and gained weight. At five or six months there was a gradual addition of soft solids to the diet. This he did not like. The age at which the bottle was given up was not recalled.

Toilet training was effected by the nurse who cared for the child for the first 2½ years of his life, and to whom he was devoted. She was an exceedingly neat, meticulous, strict woman. She began his toilet training when he was between three and four months old by holding him on a pot in her lap. The parents did not recall the length of time which it required, but it was "very short" and the nurse took pride in achieving quick toilet training. She was also fastidious about the child's general cleanliness, washing his hands many more times than was necessary. Obviously such training was coercive.

Clinical findings: The patient was a good-looking, blond-haired, blue-eyed, intelligent boy. The day he was seen for psychiatric examination he looked serious, unhappy and harassed. Only once in the first session did he smile. A bit pale, he was fairly well nourished though not robust. He talked very little; usually he declined to respond to conversational leads, and when he did speak, his voice was low and conspicuously lacking in childhood enthusiasm. Negativism, an outstanding feature of his behavior, was demonstrated by his declining to have his wraps removed, refusing to come into the office and rebuffing all overtures to interest him in the toys. His need to control those about him was seen in the play with the truck when he ordered the physician about, also in the tea party play when he made her wait for her tea.

Because of the child's refusal to enter the office, most of the treatment during the first few weeks had to be carried on either in the waiting room or in the hallway leading from there to the office. Significantly, on the day of his initial visit, the toy which he first began to play with was a truck with an automatic dumping device in the rear end, and throughout the entire treatment period this dump truck was one of the chief implements of his play. On leaving the office that day he asked if he might take the nursing bottle home, but on discovering the toy toilet, chose that instead and according to his mother, "He kept it in his hand all day."

The second day he suddenly picked up a piece of modelling clay and saying, "Want me to make something?" and piled up a mass of clay, grunting and panting as he added blobs to it and pounded them into place. When he was asked what it was, he replied, "A castle." The castle, too, was a theme present throughout the treatment. He always guarded it and for some time he would not let the physician or any of the dolls come near it. In his play he crossly ordered the analyst about: "Make something," he shouted, or "Get up!" "Stay in that room." "Open the door" (in rear of truck). "Give me that dirt!" (from garden at window). As the treatment proceeded, hostility toward the analyst and toward each member of his household in turn became an outstanding feature of the play. Calling one of the dolls his sister and describing her as a "teeny, weeny baby," he said sweetly that she was "very nice," but simultaneously drowned her in the tub of water. In riding the dump truck he always backed into the office and he became anxious whenever the plasticine was about to pass through the hole in the rear, abruptly giving up his play of unloading it. Also he showed anxiety whenever his hands became slightly soiled, immediately having to wash them. After about two weeks of treatment, his mother telephoned that he was beginning to show "rage and temper" at home, screaming at his nurse and telling his mother to "Shut up!" He developed great interest in the "messes" which the new puppy made on the floor. At this time it was learned that his term for defecation was "making a dump."

In the twentieth hour of treatment, when the child's hostility toward the physician was at its height, he expressed great hatred toward the doll whom he called "the mother," twisting off her head, crushing her and saying, "Bang! She's dead. She's all burned up. She's all dead now!" And he threw her across the room. His face during all this was vicious and there was clinching of fists and teeth. Shortly afterward he picked up the nursing bottle and threw it across the room, exactly duplicating the movements used in the earlier destruction of the mother. At this point in the treatment, friendliness towards the analyst began to appear from time to time, accompanied by verbalizations such as, "Would you like some presents?" Coincidently the child introduced play having to do with proffering gifts. A doll of plasticine, which he identified as his first nurse by a reference to her glasses—the nurse who had managed the toilet training—came in for a great deal of harsh treatment. "Crinkle her up! . . . Hit her with the gun." He pushed her across the room, then twisted off her head and broke her body in two. Suddenly he smiled sweetly and said, "She wears glasses and she's very funny," but quickly added, "Bang her on the ground. . . . Take that stone and bang her on the ground." He then began playing "the boy (doll) is sick," and decided to give him an enema. Holding "the emena thing," a colored crayon, to the doll's anal region, he shouted in a vindictive tone, "Give him a lot! How much has he got now?"

The father, represented by the Beccasine (amputation) doll, came in for destruction, too. In the fortieth hour the child tore him to pieces saying, "He's a bad man." (What did he do that was bad?) "He slept with his mother last night. I'm going to spank him." He then spanked the doll and added, "And he hit his mother with his hand." This theme involving the father floated in and out of the treatment during the subsequent sessions. About two weeks later when the child again called the father "bad" and was again asked what the father did that was bad, he replied, "He gave his mother a kiss, he gave his mother a dump." A few days later, "He gave his kiss to his mother." (What else?) "He brought a birthday present to his mother." At that he pounded the father so viciously that he broke the neck of an unusually strong doll.

Coincident with all this release of anger at his family, the child's stubbornness gradually disappeared, he became amiable, and there was reduction of his uneasiness about dirt to the extent that the day following a particularly active session of aggression toward the physician, he spontaneously began playing in mud from the Japanese garden. A little later (fifty-fifth hour), following play involving the interchange of gifts which was stimulated by his sister's birthday party, he started taking the "castle" to pieces, and a few days later began smearing the sides of the dump truck with it. One day during this phase of the treatment, on chancing to see a crib in the psychologist's examining room, he said, "I want to be a baby." In the baby-play period of regression that followed he passed flatus, gurgled and babbled in unintelligible monosyllables and he pawed the air with the poorly coordinated movements of an infant. Shortly afterward, when he began making mud pies, he let down completely with respect to his rigid cleanliness and enjoyed an ecstatic bout of smearing.

At this point, treatment was suddenly terminated by the mother who could no longer defer her initial plan of hospitalization and rectal exploration under anaesthesia. The following morning at the hospital, and before treatment there had been undertaken, the child had a normal bowel movement and for some weeks, at least, continued to do so. After a period of observation at the hospital, during which a complete study of the case was made, the report came back that the patient was "normal both anatomically and physiologically." At this juncture, because of the family's moving from the city, treatment had to be turned over to another analyst. Symptomatic improvement continued, but a completed analysis was not possible. Seven months after the interruption of the analysis by the hospitalization, it was learned that the patient was still functioning normally as far as bowel movements were concerned but that he was adjusting less satisfactorily since the recent birth of a sibling.

Comment: This of necessity is selected material and in its presentation no claim is made for it except that it gives a picture of what was going on inside a little child whom we know to have had exacting training in the establishment of what is usually referred to as "cleanliness" (bowel control) and whose chief presenting symptom at the time he came to treatment involved the physiological system at which that interference had been directed. Behind the constipation and stubbornness can be seen marked amounts of hostility which the child expressed in destructive aggression when he found he could do so without jeopardizing his own safety. It seems highly probable that the coercive bowel training was a factor in the genesis of the child's intestinal symptoms and his negativism.

Data from a Study of Bowel Training in a Group of Problem Children

Several years ago, stimulated by psychoanalytic publications, I began to wonder whether there were not large scale studies of children—for example, studies of problem children—by persons trained in analysis which would yield valuable information with reference to a better understanding of the neuroses. It seemed to me that numerical studies of children, even by the case history method, systematically conducted by analysts, would be of distinct value. A preliminary report of such a study, involving a group of 213 children, is now presented.

The purpose of the study was to ascertain more adequately how, as well as when, the bowel training in a group of problem children was effected—in other words, to determine if possible the incidence of coercive bowel training in these patients; also to learn how the children responded to that training and to see what light, if any, such an investigation would throw on the genesis and understanding of the children's symptoms. Unfortunately it has been impossible as yet to make a similar study on a control group of normal children, therefore no final conclusions can be made.

Definition of terms: The term "bowel training" is used in the investigation to mean training the child to forego his infantile custom of defecating when and where he pleased and to substitute elimination at a given time and in a given place. From observations of children undergoing such training, we know it to be an experience capable of stirring up considerable emotion; other considerations aside, it is one of the child's first major encounters with interference with his primitive habits. "Coercive training" is used to denote premature institution of a toilet training regime and overactive, destructive training methods. Examples of the latter include frequent and marked employment of shame; punishment for failure to comply; the use of suppositories as educative aids; rigidity of toilet schedule; unduly frequent placement on the toilet; psychological pressure such as placing a very high love premium upon perfect performance, or trying to make the child express his wants in speech before complying with his appeal for help at the toilet even though he is just beginning his attempts to talk; finally mechanical measures such as strapping the child to the toilet until he has defecated. When it comes to defining coercion in relation to the optimum time at which toilet training should be started, difficulty is immediately encountered, for this is a controversial subject, probably because those responsible for the medical care of little children have only recently begun to appreciate the emotional as well as the physical claims of the child with respect to these experiences. As a result, most of the literature on the subject is of lay origin, too often with only a superficial understanding of the problems involved, and there are few sound studies which furnish us with reliable data on which to arrive at standards in respect to these matters. In the past, mindful of the burden on the mother or nurse due to the baby's soiling, the major emphasis has been placed on establishing bowel control as early as possible; and discovering that babies could be made clean at a very early age, physicians as well as lay advisers formulated and disseminated very specific instruction for achieving this objective. For example, though it now advises more liberal management, the United States Children's Bureau publication on Infant Care, in as recent an edition as 1935 stated, "Training of the bowels may be begun as early as the end of the first month. It should always be begun by the third month and may be completed during the eighth month." The writer goes on to urge "absolute regularity," and drives home the importance of this by a picture of a mother and a baby with a clock near by and advises "not varying the time by five minutes." Then follow detailed instructions for using the soap stick as an aid in conditioning the rectum. Until very recently, such advice unfortunately was still being given by obstetrical nurses in hospitals and clinics of excellent standing, as the writer learned at first hand when having psychiatric interviews with mothers in a well baby clinic where infants were routinely brought for postnatal follow-up care by pediatricians.

In studies on the neuromuscular development of infants, Frances Ilg concluded that toilet training may start as early as 8 months, more usually after 15 months. She was of the opinion that efforts at training in the first four months are likely to result in only temporary conditioning. She found that at 11 or 12 months there may be a fussing after the bowel movement that is the beginning of the learning process. Incidentally, she observed that "at about 18 months a definite sense of guilt appears and it is then that parents are likely to punish children for failure."

Neurologists state that the pyramidal tract "is not completely myelinated until the twelfth to eighteenth month of life; a Babinski toe sign may be found in normal infants during this time." Training which is started in the first few months of life, therefore, has to rely on the local conditioning of the rectal sphincter by reflex action rather than on voluntary control. If a child is burdened with so complicated a set of coordinations as those employed in voluntary control of the bowel movements before his neuromuscular development has reached the stage where he can cope with such a task, it puts too great a burden upon him from a physiological point of view. On the emotional side, it is a frustrating experience, it too often fosters anxiety and guilt about excretory substances and owing to the fact that too much is expected of the child he may develop feelings of inadequacy because of his lack of skill.

Considerations such as these plus the clinical observation that prematurely instituted bowel control is frequently followed by relapse later on when the child goes through emotionally disturbing experiences, has led me to advise parents to wait until the child begins by grunting, wriggling or similar means to indicate his need to defecate before they begin to train him and to suggest that because of individual differences, this may occur as early as 8 months but more often does so after 15 months. In view of the above considerations it seemed reasonable to consider training which was started before the age of 8 months as forced or coercive, as far as the time factor is concerned, though it is granted that the optimum time for beginning training is an unsettled question. The age at which bowel control should normally be completed is also controversial. In this study, the period from 18 months to 2 years was accepted as adequate, and training which was completed before the child was 18 months old was considered coercive.

Method: This study is part of a more comprehensive investigation started in 1935 in the course of duties as psychiatric consultant in the Pediatrics Out-Patient Department of The New York Hospital where, when the histories of the children referred for psychiatric consultation were taken, the psychiatrist routinely asked for specific data regarding the emotional concomitants of the child's living through such fundamental experiences as nursing, toilet training, early sexual interest and activity (*e.g.*, as expressed by questions regarding the origin of babies, reaction to the discovery of the anatomical differences between the male and the female, masturbation and sex play). One section of the more comprehensive survey has already been reported: The Incidence and Character of Masturbation Threats in a Group of Problem Children.

The study of bowel training is based on findings in 213 children referred because of the usual difficulties encountered in child psychiatry, such as motor disturbances (restlessness, tics, body manipulations, speech disturbances), physical symptoms for which no organic basis could be found, mental symptoms such as pathological fear, failure in school work although the intelligence was good, and conduct disorders. Because the referrals came through a pediatric service, there were fewer cases of delinquency than is usual in a child guidance clinic unaffiliated with a hospital.

Of an original group of 432 unselected cases referred, 62 mental defectives were omitted from the bowel training study because they constitute a fairly specific type of problem in which the etiology is more often on an organic basis. In 57 other cases it was impossible to secure the data regarding bowel training because the child was accompanied by someone other than his parent, and in 100 cases the necessary data could not be secured because the emergency of the presenting problem, or some other exigency, precluded getting it.

At the time the histories were taken the children ranged in age from 1 to 13 years inclusive, about a third of them being under 6 years old and all except two being under the age of 13. There were 141 boys and 72 girls. Of the 121 in which the religion was recorded on the face sheet of the medical chart, over a half were Hebrew, a third were Roman Catholic and the remainder Protestant. Both parents were native born in less than half the cases. Since the study was made in an out-patient service where the patients pay what they can afford for their medical service, and only a fifth of those in the study required free care, by and large the children did not come from our most underprivileged group with respect to economic status.

Usually it was the mother or a mother substitute who supplied the historical data, for as a rule it was she who accompanied the child to the clinic. Most of these mothers had at least average intelligence and many seemed superior in intellect. The impression that many of them were poorly adjusted is borne out by a study made of the mothers of an overlapping group of 488 problem children two years ago, in which it was found that 203 of the mothers were suffering from psychopathological disorders. In the present study, it proved more difficult to secure reliable histories as to the children's training in bowel control than was the case in getting their sexual histories. The mothers were more reticent, more often ill at ease, more often impatient with the inquiry and more often had completely forgotten what had occurred.

In the course of taking the routine psychiatric history, when the matter of toilet training came up, the mother was encouraged to go into the subject in some detail, the psychiatrist aiming to get whatever information was forthcoming on such questions as: Was it the mother or someone else who did the training, what routine and methods did she employ? Did the child cooperate readily, or did he manifest fear, rage or defiance? On the other hand, was he excessively compliant with the demands made upon him? Did he develop constipation or diarrhea in the course of the training? Was he punished for accidental soiling and if so, what was his reaction?

Findings: Of the 169 cases on which we have definite data with respect to the time at which bowel training was started, 91 of the children fell in the group of coercively trained, *i.e.* training was started before the age of 8 months. If to that we add the 13 children whose training was said to have started when they were "very young" and who I believe rightly belong in this group, the number would be 104, or over half the cases. In only 16 was the training started after 15 months, the age period in which Ilg, out of her studies of the neuromuscular development of the infant, concluded it would usually be more wise to start. In 5 of these, it was started so late as to constitute pathological deferment of training, *i.e.* at 23 or 24 months.

Specific data on the age at which bowel control was established were obtained in 156 children. Of these, 83 children were completely trained before the age of 18 months, 30 of them having achieved control before the age of 12 months. One child is said to have "never soiled." It has been my experience that the child who "never soiled" is invariably one whose healthy personality development has been seriously impaired by his mother's pathological preoccupation with bowel function.

A case by way of illustration is that of a 10-year-old boy with an intelligence quotient of 170 under treatment because of functional torticollis, constipation, and anxiety about school work. In one treatment hour after casual reference to some trouble he had had with the housemaid, he suddenly began crying hysterically. Nothing the therapist could do was effective in reducing his anxiety or ascertaining the cause of it. At the end of the hour when his mother called for him, it transpired that his panic was due to a sudden need to defecate and that he had been "too embarrassed" to ask to go to the bathroom, this although during the preceding weeks of treatment he had habitually gone to the bathroom directly across from the playroom to urinate at the beginning and the end of each treatment hour and had always left the bathroom door open while he did so. The guilt which overwhelmed him on this occasion is readily understandable when the history of his bowel habits is scrutinized. He, too, had never soiled and up until he was 10 years old, when psychiatric treatment started, his chronically constipated mother had always inspected his stools. Until he was 8 she had wiped him following each defecation. At the time of the anxiety attack in the office the mother accounted for it by saying that the child rarely moved his bowels anywhere but at home.

With regard to the method employed to effect bowel control, it was possible to get an adequate history in only 68 of the 213 children. The most striking feature of the study was the frequency with which the mother either disposed of the query with a meager remark which gave no real light on the subject, evaded altogether or else said she had completely forgotten how she had effected the child's control of his bowel movements.

Of these 68 children, 37 or over half were subjected to methods of training which were coercive, as defined earlier in the paper. One mother, for example, said that when she started training her child she put him on the pot "every twenty minutes." Competition among mothers seemed to be one factor behind the frequent employment of heroic measures. As an illustration, a mother who brought her child of five to clinic because of delayed and defective speech wondered if the difficulty could be partly due to the fact that, competing with other mothers in the neighborhood who were training their children to toilet, she used to be harsh with the child and attempt to force her to say "attention" to indicate her need to defecate.

The child's emotional response to training was investigated in 163 children, that being the number whose reactions during training could be ascertained. Of these, 76 reacted in a manner which was undesirable from the point of view of ultimate health. Of the 30 children reporting on this item whom we know to have been subjected to coercive methods of training, 21 or over two-thirds manifested an undesirable response. Deciding what is a desirable and what an undesirable response to bowel training experiences, is particularly problematical, for to my knowledge, in neither Medicine nor Psychology has the necessary preliminary research been done for the establishment of norms in regard to the matter although Gesell, in his study of toilet habits, has made a start.

In this study I have considered "undesirable" any response, understandable though it may be in the light of the prodding to which the child was subjected, which laid down a pattern for unhealthy or symptomatic manifestations in the future. If so classifying these reactions provokes controversy, that will be profitable for we need exchange of opinion as to what is healthy behavior in response to early experiences such as these which the developing personality undergoes.

Of the 76 children whose response was considered undesirable, 24 responded with constipation, 21 with fear, 10 with negativism, 6 with "loose stools," 3 with reactions of rage, 2 with excessive cleanliness and 12 with various other types of behavior; for example, one child, refusing to defecate in the toilet, would habitually get up and soil his clothing. Another would sit on the toilet only if naked. A third responded with excessive guilt to his soiling accidents: "He would promise over and over he would never do it again." There is overlapping of course, for some of the children showed more than one type of response.

DISCUSSION

The findings in a detailed study of the psychopathology of a child conducted in the course of psychoanalytic treatment have been presented. The symptomatology at the time the patient came for analysis was that of an infantile neurosis. Frustrated in early infancy because of unsatisfying breast feeding and a rejecting mother, the child was poorly prepared for meeting life's vicissitudes. Toilet training, effected by an excessively neat, exacting nurse who began the training between his third and fourth months, was coercive. The details of the child's immediate response to the training are unknown, but the fact that bowel control was so quickly effected suggests that there was over-ready compliance. At the age of 2½, frustrated again by the permanent loss of his nurse, he developed persistent constipation and became an irritable, stubborn child.

In view of the fact that the neurotic symptoms were precipitated by the loss of this nurse who had effected his toilet training, that one of his outstanding neurotic symptoms involved bowel function and that in the course of the analysis his past experiences in connection with bowel function assumed a very prominent place in his play, also that in living out his hostilities through play he vigorously punished the nurse who did the training, it seems reasonable to conclude that there is a relationship between the coercive bowel training and the genesis of his neurosis. It also seems likely that there is a relationship between the coercive training and the type of symptomatology through which the neurosis came to express itself. Parenthetically, it might be stated that examination of a large number of problem children and coincident interviews with their mothers has left the impression that the influence of the mother's psychopathology on the developing child is an important factor in the "choice of symptom." A systematic study of case material is in process to ascertain whether or not this impression is borne out by clinical findings in unselected patients.

That coercive bowel training such as that experienced by the child analyzed occurs fairly frequently in children presenting incipient psychopathology, is supported by a survey of 213 problem children. It was found that of the patients reporting on the time at which toilet training was started, over half were started too early. Likewise, of those reporting on the time the training was achieved, over half had their training completed prematurely. The item which proved most difficult to secure was that of the method employed, data on this point being obtainable in only 68 of the 213 children. In response to this part of the inquiry, the mothers found it even more difficult to go into the matter than was the case in a survey of the children's sexual histories. They reacted with various forms of resistance and many of them had completely forgotten how the training was conducted. It was as if they half-sensed culpability in connection with the manner in which they had conducted the training. In 37 of the 68 children, the method employed was coercive, in some cases great pressure either psychological or physical being brought to bear on the child.

This paper does not encompass a study of the possible correlation between coercive bowel training and the symptomatology which brought the problem children to the psychiatrist, but it presents the immediate responses of the children to coercive training. Of the 163 patients reporting on this item, nearly a half reacted in what might be called a self-damaging manner. There is no basis in the findings of the study for saying that these children, like the boy analyzed, have developed neurosis, but it is significant that their immediate response to exacting bowel training was in terms of the stuff by which neurosis often manifests itself: constipation, loose stools, anxiety, rage, negativism, excessive cleanliness, guilt.

While no clear-cut conclusions can be made regarding the light which these clinical studies throw on our understanding of neurosis, the findings seem sufficiently provocative to justify research of the type presented. If at some time in the future similar studies and adequate control investigations should support the theory which these findings seem merely to suggest, namely that one etiological factor in neurosis is what is done to the developing personality as it weathers certain dynamic experiences during the first few years of life, then we would have adequate basis for the application of appropriate prophylactic measures at some of the starting-points of the psychopathology.

5

THE INCIDENCE AND CHARACTER OF MASTURBATION THREATS IN A GROUP OF PROBLEM CHILDREN*

by

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New York

The great volume of scientific literature on the subject of masturbation is evidence of man's repeated endeavor to solve the problems related to this particular means of genital excitation. Most of the earlier writings were concerned with such questions as the incidence of masturbation with respect to age, sex, and culture, the methods by which masturbation is practiced, whether it is normal or perverse, the harmful physical, mental, and moral consequences of the habit, and finally its treatment.

Since the time when Freud began making his profound contributions to our understanding of emotional problems, however, there has been a change in emphasis in the literature on masturbation. Students in this field have begun to show an increasing interest in such phases of the problem as to what masturbation means to the individual in terms of his attitude toward it, the social and psychological factors influencing those attitudes, and the relation of his feeling about masturbation to such fundamentally important emotions as guilt, fear and anxiety. Discerning students also have begun to consider the bearing which the latter unhealthy emotions have upon repression and upon the individual's feelings later in life regarding his genitals and genital functioning.

Today it is generally agreed that conflict over masturbation is a fertile source of emotional trouble. It is the belief of most psychiatrists that when a child masturbates, his parents or those functioning as parent substitutes usually threaten him in some way in an effort to insure his breaking off the habit. It would not be surprising if clinical investigation substantiated this belief, for until recently drastic treatment has been the form of management most writers on the subject have advised.

Probably Tissot did more than any other one individual to influence therapy in this direction. Convinced of the terrible consequences of masturbation, in 1760 he published in Lausanne his noted monograph,

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Masturbation; or the Treatment of the Diseases that Result from Self-Abuse. Translated into many languages, it had a profound effect upon subsequent thinking with respect to the dangers of masturbation. Its tenor is indicated by the following quotation from Von Canitz, which, according to Bloch, Tissot took for the motto of the St. Petersburg edition of his book:

> When base lust fills thy thoughts,
> Let a horrible picture rise before thy mind
> Of withered dead men's bones,
> So let the sensual stimulation be driven away.

Other equally pessimistic writers followed Tissot and their point of view became so firmly intrenched that even after later writers had pointed out the exaggerations of those traditional beliefs, treatment involving warning, threats or punishment was still predominant. For example, Féré in his chapter Sexual Education and Hygiene says, 'Children may be taught that such methods of reaction against local irritation are dirty or unseemly. . . .' Speaking of masturbation in adolescence he says, 'Tendencies to onanism should be anticipated by warnings as to its harmfulness or dangers.'

G. Stanley Hall in a footnote refers to a pamphlet published in 1903 in which a physician elaborates an address which he gave at the Thirty-ninth Session of the American Medical Association. Writing anonymously in the form of an address to adolescent boys he says, 'If a boy in an unguarded moment tries to entice you to masturbatic experiments, he insults you. Strike him at once and beat him as long as you can stand.' Steinhardt in his book, Ten Sex Talks to Boys, with an introduction by Ernest Thompson Seton, Chief Scout of the Boy Scouts of America, warns his readers, 'I have seen boys as young as twelve years, or slightly more, and upwards, in insane asylums from excesses of this kind (masturbation), and the cure of the mental condition, in these cases, is almost hopeless.' In his Ten Sex Talks to Girls, with an introduction by the Chairman of the Social Hygiene Committee of the American Federation of Women's Clubs, the same author says, 'Masturbation, if indulged in to excess, will cause a breakdown of the nervous system, and cause you to end your days in a mad house, or send you to an early grave.' Surgical treatment for masturbation has enjoyed considerable popularity. Freeman, for example, recommends it for masturbation in female infants and says that in these cases the only durable treatment is separation of the adhesions and circumcision.

The following comments from Bloch's discussion of the treatment and cure of masturbation are interesting: 'According to the suggestion of Ultzmann, in the case of nursing infants and of small children, the hands may be confined in little bags or tied to the side of the bed. The methods of the older physicians, who appeared before the child armed with great knives and scissors, and threatened a painful operation, or even to cut off the genital organs, may often be found useful, and may effect a radical cure. The actual carrying out of small operations is also sometimes helpful. Fürbringer cured a young fellow in whom no instruction and no punishment had proved effective, by simply cutting off the anterior part of his foreskin with jagged scissors. In the case of a young lady who often in company indulged her passionate impulse toward masturbation, he brought about a cure by repeated cauterization of the vulva. Other physicians perforate the foreskin and introduce a ring. Cages have been provided for the genital organs to prevent masturbation, the key being kept by the father. Enveloping the penis in bandages without any opening has also been tried. Corporal punishment sometimes has a good effect.'

One of the standard textbooks in Pediatrics states as recently as 1936 in a discussion of the treatment of masturbation: 'In young infants much may be accomplished by mechanical restraint. The kind of restraint which is necessary will depend upon the manner of masturbating. If by the hands, they should be tied during sleep, so that the child cannot reach the genitals. If by thigh-friction, the thighs should be separated by tying one to either side of the crib; in inveterate cases, a double side-splint, such as is used in fracture of the femur, may be applied.' Thus we see that parents and others who deal drastically with the child who masturbates are not without authority for doing so.

When the literature is searched for data concerning the relative frequency with which children are threatened for masturbating, much less has been recorded than one might expect. In fact many of the classical works on sex behavior have nothing to say about this particular subject. It is true that various writers, especially the more recent ones, make the general statement that children are so threatened. For example, Freud, writing On the Sexual Theories of Children, says, 'A child who is chiefly dominated by penis-excitation usually produces pleasure by stimulation of it with his hand, is detected doing this by his parents or by the persons in charge of him, and is terrorized by the threat that his penis will be cut off.' Again in discussing 'fear of castration' in his lecture on Anxiety and Instinctual Life he writes, 'It is not primarily a matter of whether castration is really performed; what is important is that the danger is one that threatens from without, and that the boy believes in it. He has some grounds for doing so, for not infrequently threats of his penis being cut off are made during his phallic phase, at the time of his early masturbation; and no doubt allusions to such punishment will always find a phylogenetic reinforcement on his side.'

Meagher writes, 'Many well-intentioned but foolish parents or nurses threaten to amputate the penis or hand of the young child in order to cure the masturbation.' Menzies likewise says, 'It is, indeed, a not uncommon practice on the part of parents, nursemaids, and others, directly to threaten amputation of the genitalia or hands if the child is detected persistently "playing with itself." ' Thom speaks of parents who in their efforts to overcome the habit of masturbation in the child subject him to dire threats and punishments, and Chadwick states that the classical threat for masturbation is mutilation—in boys that they shall be deprived of the penis, in girls that the hands will be cut off.

A search for more specific information, namely clinical evidence for views such as those expressed above, reveals that the chief source of data on this point is the case material on individual patients who have been under psychoanalytic treatment. Abraham, in presenting the history of a case of cyclothymia recounts that before the patient was six years old his precociously aroused sexual excitement had led him to masturbate and that when his nurse discovered it she 'expressly forbade him to do it, and whipped him whenever he disobeyed her. She also impressed upon him the fact that he would suffer for it all his life.' Deutsch tells of a patient who, recalling that she had masturbated between her fourth and sixth years, said that in order to check it her mother bound her hands and feet, strapped them to the crib and said, as she stood looking on, 'Now play if you can!' In a case study by French the statement occurs, 'One day when the patient was seventeen years old, his father took him for a ride and called his attention to an "idiot" in town whose demented condition, the father said, was the result of his masturbation.'

Freud in A Phobia in a Five-Year-Old Boy states regarding little Hans, 'When he was three and a half his mother found him with his hand to his penis. She threatened him in these words: "If you do that, I shall send for Dr. A. to cut off your widdler. And then what'll you widdle with?" ' Schilder in discussing a patient's fear of punishment because of his active sex wishes says, 'The patient's father had often warned him against masturbation and he has always had the feeling that sex is something very dangerous, or that he could perish as a result of sexual abuses.'

We have found no study of a series of children's cases which had been investigated for evidence as to whether masturbation was dealt with destructively or not. The nearest thing to such an inquiry is Gardner's investigation of night terrors in a group of 15 patients ranging from 22 months to 7½ years of age. In reporting in detail the findings in one of the children in his series he makes the very interesting statement, 'In the first place, it points to what we have found as an important etiological factor in all of the cases of night terror that we have observed—the threat of mutilation of some part of the body, usually hands, stomach or genitals, as a punishment for masturbatory activities.'

Another survey which has a bearing upon our topic—though it is based on the findings in adults, not children—is that of Pullias, reported in 1937. In a group of 75 first year college men who were questioned regarding their beliefs as to the effect of masturbation, 72 per cent had been told that masturbation would cause serious physical damage, 69 per cent[1] that it would give rise to mental damage and 52 per cent that it was a direct cause of 'insanity.' Only 5 per cent believed no serious damage would result.

The present study is based on 320 problem children referred by a general pediatrics clinic for psychiatric consultation, the children being examined during the period 1935–1938. Two hundred and twenty-eight, or 71.3 per cent, of the patients were boys; 92, or 28.7 per cent, were girls. Most of the children were of average intelligence; many were intellectually superior. The difficulties which led to their referral for psychiatric consultation were such problems as enuresis, compulsive behavior, fidgeting, fears, aggressiveness, disobedience, temper tantrums, speech disorders, thumb-sucking, nail-biting, feeding difficulties, night terrors, physical symptoms for which no organic basis could be found, mental retardation, and school failure in spite of normal intelligence.

In the course of securing the psychiatric history preliminary to the examination of these children, the writer asked each parent or parent substitute, as a part of the routine inquiry regarding habits, whether the child had been known to masturbate, if so at what age the masturbation had first occurred, finally what measures if any were used in dealing with the situation. The inquiry pertained to any form of masturbation, whether auto-masturbation (manual or by any other means such as thigh compression or pulling the clothing back and forth against the genitalia) or mutual masturbation.

It was not until after the material was gathered that the idea occurred of using it in connection with a concrete study. In a discussion regarding certain clinical procedures the question arose, 'Is it true, as many believe, that children are frequently threatened or subjected to other destructive measures when they masturbate?' Then it was decided to go over the records of these 320 children to see what light the recorded data would throw on this specific question.

The children involved in the study ranged in age from 1 to 14 years inclusive, the age distribution being as follows:

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[1] There was overlapping due to the fact that some of the men received several types of information.

TABLE I

AGE OF PATIENT AT TIME THE DATA WERE SECURED

Age: Years	Number of Children
1	2
2	8
3	24
4	23
5	34
6	42
7	33
8	35
9	37
10	36
11	27
12	15
13	3
14	1
Total	320

Of the 320 children examined, 142, or 44.4 per cent, were reported to have masturbated. According to the statements of our informants, the remaining 178, or 55.6 per cent, had not. The ages at which the children were first known to masturbate are given below:

TABLE II

AGE AT WHICH CHILD WAS FIRST KNOWN TO MASTURBATE

Age: Years	Number of Children	
Infancy, exact age not specified	8	54·3%
Less than 1 year[2]	5	
1	12	
2	16	
3	16	
4	20	
5	9	
6	8	
7	4	
8	6	
9	3	
10	2	
11	0	
12	0	
13	1	
Age not specified	32	
Total	142	

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[2] Age 5 months, 1; 9 months, 2; 10 months, 2.

It is interesting to find that of the 142 children reported to have masturbated, 54.3 per cent of them were known to have first done so before the age of 5 years.

Turning now to the main object of the study, namely an investigation regarding the frequency with which the parents dealt destructively with the child's masturbating, it was found that such measures were used in 128, or 40 per cent, of the 320 children.[3] This finding alone is of considerable significance but an analysis of the various types of destructive response is still more enlightening. For example, 20.3 per cent of the 128 children were actually punished and 84.4 per cent[4] were severely threatened. In 67.2 per cent of the 128 the threats were physical in character; in some cases bodily injury was to be inflicted by some adult, in

TABLE III

PUNITIVE RESPONSE TO CHILD'S MASTURBATING

Response			Number of Children Involved[5]	Percentage of the 128 Children Involved
Mild Censure ('It isn't nice,' etc.)			25	*19.6*
Scolding (Content not specified.)			6	*4.7*
Punishment			26	*20.3*
Slapping, whipping		23		17.8
Deprivations		1		0.8
Put in cellar		1		0.8
Red pepper on fingers to burn genitals		1		0.8
Mechanical Restraint			2	*1.6*
'Binding his body'		1		0.8
Legs pulled apart, tied		1		0.8
Humiliation			9	*7.0*
Threats			108	*84.4*
Physical		86		67.2
Whipping and allied threats	4			3.2
Child would be taken away	4			3.2
Genital injury	46			36.0
Other physical damage	32			25.0
Mental (Mind would be injured)		10		7.8
Moral, Religious		10		7.8
Humiliation		2		1.6

Total number of children involved above: 128.

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[3] Of the 142 children known to have masturbated, 73.3 per cent were dealt with destructively.

[4] There is overlapping because some of the children received more than one type of treatment.

[5] The total number of children in this column exceeds the total number of children on which the table is based (128) because in the case of some children more than one type of punitive response was made by the parent.

others the child was warned that the masturbation in itself would lead to damage to the body. Of particular interest, because of its bearing on the problem of castration anxiety, is the finding that 36 per cent of the 128 children were specifically threatened with injury to the genitals. It should be borne in mind that all of these figures are minimal for they do not take into account the children whose masturbation and its punishment had been forgotten by the informant, and therefore was not reported.

Although we do not have the exact ages at which the children were threatened, we know that in many of the cases it was before the age of 5 years, for usually the threat occurred when the child was first observed to masturbate and, as is shown in Table II, over 50 per cent of the masturbators were first known to have practiced the habit during the preschool age period.

These statistics yield significant information, but when our data were pooled for study, it was obvious that the parents' verbatim statements, the majority of which had been recorded in the case records in the form of quotations, constituted the most revealing feature of the findings. For this reason it seemed wise to include them in our report. The numerals which follow some of the quotations indicate the number of children whose masturbation met with that particular type of parental response.

TABLE IV

Verbatim Statements Made to Children When They Masturbated

Mild Censure, Punishment, Humiliation

'It isn't nice.' (*14*)

Mother scolded child. (*2*)

Mother slapped child's hands. (*5*)

Mother slapped child's hands because father has read masturbation may cause people to be 'fiends.'

Mother slapped child.

Boarding mother put him in the cellar.

Mother put red pepper on child's fingers so that she burned her genitals the next time she touched them and cried.

Father gave her 'an awful whipping for it.'

Mother pulled her legs apart (for masturbating by compressing thighs) and tied them to the high chair.

Parents shamed child. (*6*)

Threats

'You can get a blood poison . . . and you can die.'

'Do you want me to take you to a doctor and have him cut it (penis) off?'

'She might injure herself' (genitals).

'You'll hurt yourself and then I'll have to tie it (penis) up in a bandage.'

Mother threatened to hit his hands.

'The pussy would see it (masturbation) and bite it (penis) off and then he'd be a little girl.'

He would 'get it (penis) full of germs.'

Warned of danger of infecting genitals. (*4*)

'The doctor will sew your *po po* (vagina) up.'

He would 'not grow strong.'

Penis 'would get sore and need an operation . . . that he would become a girl.'

He 'might injure himself so he couldn't urinate and then he would get sick.'

He would 'become a cripple.' Again, that he 'would get a hernia.'

He might 'get bugs' in his penis.

He might 'hurt himself' (penis).

'Get sick.' (2)

Health Station nurse threatened he would have to 'go to a hospital' where his penis would 'be cut and be terribly sore.'

He would 'get sick and have to go to the doctor.'

He would 'make it sore' (penis). (2)

He 'would be taken to the hospital.' Subsequently feared hospitals.

'He would get a pimple on it (penis) and the doctor would have to cut it and he would be in pain.' Sometimes said, 'If you touch it (penis) it is liable to fall off and make a girl out of you.' Also the family physician would cut off the penis.

He 'might get germs on it (penis) and it would get very sick, it would get swollen and need an operation.'

'O my God, you look so pale! Are you doing things you shouldn't? If you do, it'll ruin your health.'

Mother would send him to a hospital again, that his penis would 'fall off and he would be out of luck' (unable to urinate).

He 'wouldn't grow up to be a big man.'

Might injure the genitalia by 'dirty hands or a scratch.'

'The bad man would take him away.'

'Those parts are sensitive.'

Frightened child by appealing to her 'germ sense.'

Grandmother threatened injury (type not specified).

'He would get sick and it would be terrible.'

'I threatened it would injure him—make him sick.'

Mother warned her the genitalia are 'like the eye—very tender.' Touching them might lead to infection 'and affect her when she grows up.'

'It will stunt your growth.'

'They might rupture themselves and be sorry for it later in life.'

He 'would get sick and have to go to the hospital and I don't know what they would do to you there.'

He might 'hurt it' (penis). He knows if he hurts his testes 'the seeds won't grow.'

The penis 'is a delicate part of the body,' that germs from his dirty hands might cause it to be 'sick, diseased—something really will happen to you.'

It would 'make him very nervous and unable to concentrate.'

The penis is 'nothing to toy around with'; if he did so it would 'spoil his mind—make him an idiot.'

It might make his face 'look funny.' Also 'I know two who got crazy and died' as the result of masturbation.

'Don't touch yourself or you won't be able to do your lessons in school. You'll go out of your mind and they'll put you away where all the crazy people are and you'll never be able to see me' (mother).

'It isn't right.' (2)

'A dirty thing to do—a naughty thing to do.'

'It's bad.'

Child is told he is 'a bad boy.'

Combination Responses

Penis 'will get very red around the rim and you'll end up by going to the hospital for good. You might make yourself so nervous that when you get big you won't be able to have a nice baby.' Also mother threatened to paint his penis with mercurochrome.

'I did everything the doctor told me,' *i.e.* applied argyrol to child's genitalia every few days. One doctor 'injected needles in her arm.' Mother adds, 'I hit her many times—I used to kill her for it, I used to scare her—tell her she might ruin herself, that once she dug her nose until it bled and now she might make herself bleed down there' (genital region).

'He might get sick—get sore.' Medicine would have to be applied which would burn his penis. He might have his penis cut off.

Mother slaps his hands and whips him for it. Tells him 'everyone will be talking about him' and that 'he'll have to go to the hospital where the doctor will cut his penis off and he won't be able to urinate.'

Get sick and have to have an operation on his penis. His penis would 'fall off.'

'Told him it wasn't nice and that he would make himself sick.'

Mother 'scolded him' and threatened to tell the doctor about it.

'I spanked him every time he did it' and threatened he would 'get sick, have to go to the hospital where he couldn't see Mamma any more.' Also said, 'God wouldn't like him.'

Mother 'scolded,' said the penis was 'for just one thing—going to the bathroom' and that if he masturbated 'he wouldn't grow up as he should.'

Mother said he would get sick and have to go to a doctor. Father threatened to put him in the cellar.

'I spanked him terribly and told him if he ever did it again I was going to cut his hands off.'

Mother slapped his hands. When this failed to stop the masturbating she threatened to cut his penis off.

Scolded and whipped her.

Shamed him and threatened to hit him.

Mother hit him, 'hollered at him,' told him he 'might get sick' and the doctor 'might cut it off.' Father 'scared the life out of him.'

Mother told him he was 'doing wrong, he might get sick and he might have to go to the hospital for examination.'

Masturbation would cause pimples to develop and he would 'get covered with sores all over and get sick.'

'Smacked his hands' and threatened he would 'get sick.'

Mother said, 'It isn't nice. It might hurt you.' Teacher in first grade threatened to cut his penis off.

Mother threatened to put diapers on him and to 'cut it off' (penis).

Warned, 'It's a sin' and that she will 'get so sick' if she even thinks about it.

Mother 'broke it off' by 'binding his body' with a towel. Threatened germs would get on his penis causing him to be ill and to 'hurt terrible.'

'It isn't nice.' Also that if he didn't stop he would 'make blood or something.'

Slapped her hands, told her it wasn't nice and that she might 'have *boo-boo*' (a sore) in genital region.

'Hollered at him' and told him he might get sick, might get 'ruptured.'

Deprived him of comic strips and his favorite food, eggs. Shamed him saying the masturbation was due 'to the animal in him.' Later threatened, 'You're going to get softening of the brain; you're going to be like Gerald' (a 'silly boy' whom the children call 'Crazy'). Later threatened reform school and put him on a reform school regime.

Shamed him and told him his penis would 'get sore, *boo-boos*.'

Mother 'punished him terribly' (whipped him and put him to bed). Also told him 'Jesus would punish him and that he would be a bad man.'

Told him it was 'no good,' that the policeman would put him in jail, that his father would 'cut it off (penis) and then you won't have it any more.'

Not nice. It would 'spoil his health.'

Said it 'wasn't nice,' threatened to spank him, said his penis might get infected and be sore and that 'they might have to cut it off—that's why he's afraid' (of the hospital).

'It's awfully bad for you.' Also, 'I scared the insides out of her . . . told her it would be terrible if she lost her mind and that it might make her silly.'

Told him it was 'bad'; threatened a whipping.

Told him 'not to do it,' that 'it wasn't nice, he might hurt himself' or might break his penis off.

'It's the worst thing you can do. It might cause an illness so you'll need medical attention. . . . It might get so it will just rot and dry up and you'd be the only boy walking around without one' (penis).

Slapped her hands and told her, 'It isn't nice.'

Slapped his hands, told him it wasn't nice and that his penis might 'get sore.'

Slapped his hands and warned, 'If you do that you are going to grow up a sick man.' Once when penis was inflamed mother told him it was the result of masturbation and that 'it's a very dangerous thing to play with any part of the body—if you play with the nose you might get a nosebleed.'

Told him 'it wasn't nice, it might make him crazy.'

Said it 'didn't look nice' and that his penis would swell.

Whipped her severely and told her it was 'a terrible thing to do, an awful thing to do.'

'It will hurt you in later life. . . . You will get terribly nervous and sick.'

Told him he 'wouldn't grow up strong, that it might affect his body in every way, and his mind.'

The above findings warrant serious reflection for they make us realize that even at the present time, popular thinking about masturbation and its management is still too greatly influenced by the ideas and attitudes prevalent centuries ago. For instance there is a strong resemblance between the above threats and the warnings of Galen in the second century who in writing about masturbation admonished, 'Watch carefully over this young man, leave him alone neither day nor night, at least sleep in his chamber. When he has contracted this habit, the most fatal to which a young man can be subject, he will still carry its baneful effects to the tomb, his mind and body will be always enervated.'

Some of the incidental findings are of interest. For example, while no specific inquiry was made of the parents as to what medical advice they had received regarding the best way of dealing with masturbation, in the case of only one patient out of the 320 did the parent mention that the child's physician had advised what today is generally conceded as constructive treatment. In this instance the father stated that when the child was about one year old he masturbated for a time, but on the advice of the family physician it was ignored and the habit finally disappeared.

Again, it will be noted in Table IV that often the child was told that the doctor would cut off its genitals if the masturbation did not stop. This is significant because of its practical bearing on the problem of the many children who come to the pediatrics clinic or the office of the private physician already set to react with terror to the necessary procedures which the physician must take in looking after the child's health.

Another interesting observation is that in the majority of cases constituting this study, it was the mother or mother surrogate who threatened the child when he masturbated. This is in signal agreement with Freud's statement in The Passing of the Œdipus Complex that 'Usually it is from women that the threat emanates.' What this may have to do with the type of threat which the masturbation calls forth is in itself of interest and a question warranting investigation at some future time.

CONCLUSIONS

This study, limited in scope, reveals that in a group of 320 problem children 128, or 40 per cent of the children, were dealt with destructively concerning masturbation. The destructive measure most frequently used was that of the direct threat. The threats were drastic in nature. Physical threats were employed more frequently than any other type and in over half of these cases, the children were threatened with genital injury. The findings are an understatement for they involve only those cases in which the parents had not forgotten the child's masturbation and how it was handled, and who felt secure enough to tell what occurred.

The verbatim statements of the parents as to what they did or said when the children were found masturbating are particularly significant for, although obtained in the course of taking routine clinical histories rather than through analytic procedures, they bear out a fundamental psychoanalytic formulation. In other words, this study is of especial interest in that it presents a body of factual information which strikingly corroborates the Freudian concept, 'castration threat.' Frequently, too, the criticism is made that psychoanalytic theories have been postulated on the basis of findings in very small numbers of cases and primarily on the retrospection of adult patients as to what happened in their own childhood. Here in a group of 320 children we find substantial support for the assertion of psychoanalysis that often children, when they masturbate, are threatened with castration. This fact is important because of its implications with respect to castration anxiety.

The findings as a whole are provocative for they raise many questions which have not been adequately answered. For example, what is the incidence of masturbation threats in children who are not considered problems? Is it true that threats of this type usually emanate from women and if so, what is the significance of this circumstance for the child? Does a relationship exist between the cultural, religious and economic background of the parent and the type of his response to the child's masturbation? What is the correlation between harsh measures used in the treatment of masturbatory activities and the occurrence of anxiety and other neurotic symptoms in children? Too often it is taken for granted that our knowledge of masturbation is complete. The present study indicates, however, that our empirical data concerning the problems involved are inadequate and that much research on the subject remains to be done.

Finally, from the point of view of mental hygiene, the findings are a challenge. If, as many psychiatrists believe, drastic threats made by adults in connection with the child's masturbation generate and aggravate anxiety, thereby fostering the development of neurosis, then here is a field where much can be done in the interest of the child's future well-being. It is obvious that no amount of 'education' is going to alter deeply rooted parental attitudes. However, it is likely that those parents who are unconsciously as well as consciously interested in dealing constructively with their children's problems but who are still under the influence of the older teaching in respect to the dangers of 'self-abuse,' would profit by sound advice as to the wise course to take in dealing with their children's masturbation. The logical person to give such advice is the pediatrician or the family physician responsible for the health of the child during infancy and the preschool years, for he is the first extra-familial agent with scientific training regarding child hygiene who comes in contact with the child during those first crucial years of its life.

6

RELEASE THERAPY*

by

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There has been great interest and activity in recent years devoted to the study of the child's play as a basis for psychotherapy. Treating the child's problems by exploiting his own methods of treating himself has a sound basis, analogous to a study of the cure of disease by determining the organism's own methods of protection. How does the small child handle his own emotional difficulties? It is well known that he uses imaginative play as an important method of getting rid of tensions arising out of anxiety. Presumably, if the child's behavior were appropriate during the event that caused anxiety, no tensional residues would have remained. When the child's method of dealing with anxiety is unsuccessful, symptoms indicating the presence and the severity of the disturbance are at hand. This is best illustrated in a group of children referred primarily because of night terrors or fears, or both.

In the group of 35 cases of release therapy which form the clinical substance of this paper, 11 were referred primarily because of night terrors or fears. The group of 11 comprises 8 girls and 3 boys, age range being from 2 to 9. In these cases there was typically a specific event that precipitated the fear reaction. The problem in therapy became well defined —how to develop a method whereby the event could be restored in the child's play and thereby release the anxiety that the child had been unable to release by himself. Why had these children failed in their own efforts at abreacting anxiety, where others may have succeeded? The answer has to do with a number of factors—the strength of the stimulus is one, since fears are of varying intensity and duration. They also may be summated; that is, several events, each provoking fear, may occur simultaneously or in close time relation. Another factor has to do with the child's sensitivity to the stimulus. A fear stimulus may have a completely different effect at the age of two than at the age of eight. Moreover, a child may have been sensitized through a specific past experience that intensifies the response. A constitutional factor must also be considered. Here is an example. A boy aged 7 years (Case 7) had two experiences in late infancy in which he was bound in blankets for a paracentesis of the eardrums, without anesthesia. The mother described the boy's struggles, attested by the movements of both arms and legs, the expression of fear, etc. Each experience was of more than a half hour's duration. Also at the age of 7, some boys bound him to a tree in Central Park with ropes. One of the boys picked up an ant and dropped it on his hand. That was part of the "torture." His nurse, who had been engaged in conversation with other nurses, looked up after a while and released her charge. He was referred for treatment about four months later because of night terrors of six weeks' duration. He would wake every night sobbing and recount dreams of torture, chiefly of being bound and gagged. But these night terrors were precipitated by an event that happened on the day that the first nightmare occurred. Frightening stories were told to the class by a teacher, especially one in which two knights drove nails through the hands of an innkeeper, pinning him against his own door.

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Why the third of the series of events produced the nightmares and not the other two is not known. It is easy to understand, however, that in the three episodes the same type of experience was happening to the patient, so that the third experience, without the previous sensitizing experiences, presumably might not have caused so great an effect. The classroom story was played out in the first session in numerous versions. The boy had a nightmare as usual that night, but none in the past two months. There were four sessions in all. Though only two months have elapsed since treatment began, there is no question of the immediate therapeutic effect of such a method.

A somewhat more complicated example of special sensitivity to the fear-provoking experience is seen in Case 2, a girl aged 3 years, 5 months, referred because of generally fearful behavior and night terrors. These started at the age of 18 months, immediately following sutures of a lacerated scalp due to an accident, done without anesthesia. After this experience she became fearful and tense but improved after several months. Six months after the first accident she was hospitalized and had three paracenteses of the eardrum. Following this she became fearful of everything and fought off the nurses and doctors. Again, improvement occurred until a tonsillectomy at the age of 30 months, after which the terrors became a nightly occurrence for six weeks, gradually diminishing in frequency to about once a week at the time of referral. This fearful attitude prevented social contacts with other children in the nursery group. So far we see, as in the previous case, a sensitivity to a special type of experience. In this case there was the additional factor that previous to the tonsillectomy she had been masturbating, had been warned about it and was still struggling with the problem when the tonsillectomy occurred, demonstrated by her own activities in the playroom. The frightening aspects of the tonsillectomy can be seen, therefore, to involve a threat to the life of the child because of guilty sexual practices.

The weighting of the event is well illustrated in Case 8, a girl aged 7 years, 8 months, referred because of night terrors and insomnia of three weeks' duration. She had gone to a movie in the afternoon; there were a number of frightening episodes, but the one which apparently affected the patient had to do with a scene in which a child released a trapdoor on which a woman was dancing. The woman was a prima donna who had taken the place of an older dancer whom the children loved. The dancer fell through the trapdoor and was crippled by the fall. The patient saw the movie in the afternoon and that night had a frightening dream from which she awoke screaming. Thereafter for three weeks, until referral, she was unable to fall asleep for hours. There were other events in this movie to which the patient apparently was unresponsive, for example, an attempt at suicide by drowning.

The fear provoking episode in the movie was weighted by a number of experiences. The patient had on that very day visited her father, who had remarried. The second wife was well known to the patient since she had been a friend of the mother's. At the same time the patient was having difficulty with her governess. From the child's behavior in play therapy one could reconstruct the response of the child to the frightening episode as comprising the fright itself, as a fright at any death-threatening experience, a hostility to the stepmother, to the governess and to the mother—the stepmother for living with her father, the governess for her severity, and her own mother for throwing her father out of the house. In a scene in which the trapdoor incident was reconstructed and the child kept throwing objects on the dancer who had fallen on the basement floor, she spoke about throwing them on her mother. After the first session the child slept through the night.

This is as it should be, since cases selected for release therapy have in the main been uncomplicated; uncomplicated in the sense that the particular problems presented by the children were presumably not affected seriously by problems in the family relationship. Furthermore, they represent cases in which the child is still struggling with the effect of a specific experience in which the forces that resolve anxiety can be quickly mobilized. In the series of 11 cases a therapeutic effect on the problem presented occurred in one of the first 3 sessions in all but two cases. In these 2, therapeutic modification occurred by the sixth and eighth sessions respectively. In the 11 cases, follow-up studies are over periods varying from 2 weeks to 5½ years. In 2 cases there were 10 and 15 sessions each; in the others the number of sessions varied from 2 to 7.

Of the remaining children in the entire series, 5 were referred primarily for tics, 6 for speech disturbance, 4 for temper tantrums or negativism and the remainder for miscellaneous reasons: refusal to accept femininity (3 cases), hyperkinesis, nocturnal enuresis, inhibited behavior, reading difficulty, epilepsy, dementia (1 each). The age range of the entire group was 2 to 10, the median age 6, about two or three years lower than the median of the entire group of patients seen over that period.

Follow-up interviews for all cases have been made, at varying intervals. At the present time notations of adjustment are at hand for all children: nine, 3-6 years, sixteen, 1-3 years and ten, 2 weeks to 1 year after treatment. Success (as noted specifically in the records appended) has occurred in all but 3 cases. Experimentally tried out in one case of epilepsy and one of dementia (organic?) the method failed.

Ideally, the criteria for selecting children for release therapy are: (1) the presenting problem should be a definite symptom picture, precipitated by a specific event, in the form of a frightening experience, the birth of a younger sibling, the discharge of a governess, divorce of the parents, or the like. (2) The problems should not be of too long duration. The children are preferably 10 years old or younger. It is quite a different task treating a boy referred for fears at the age of 14 and a boy with fears at the age of 5. In the latter case the problems may be described as more specific, in the former as more closely integrated with the personality structure. The fears of many years duration have had their effect, for example, on all of the boy's social relationships, on his handling of the problem of sex, even, perhaps, on intellectual function. In that type of case, release therapy as a complete method is distinctly inadequate. (3) Regardless of the age at the time of referral and the specificity of the problem, it is important that the child is suffering from something that happened in the past and not from a difficult situation going on at the time of treatment. Release therapy cannot be applied, for example, to a child suffering from the results of maternal rejection or overprotection. In such cases, the mother and not the child is the primary or even the exclusive object of therapy. It is assumed, when a child is under release therapy, that the family relationships are normal, giving a wide latitude to the meaning of that word or, at least, that the particular problem presented is not primarily related to the family situation at the time. An example is shown in cases in which the child shows tenseness, lack of affectionate response, fear of dirt or disorderliness based on a mother or governess who has been disciplinary too soon or too severely. In such a case efforts are first made to ensure the fact that a modification in regard to maternal behavior has been made or that the governess is out of the picture.

The methodologic principle of release therapy is in the use of the acting-out principle in play to the highest degree. Examples have already been given in cases of night terrors, in which the original pathogenic situation has to be re-created. Cases of tics may be used as examples in which the problem of restoring the act is no longer present, because the act, the tic, is there. I refer to those tics which represent the act as partially fulfilled or displaced. A boy aged 8 years (Case 21) was referred for a variety of tics, including a mouth-opening tic, characterized by frequent sudden involuntary wide opening and closing of the mouth. It represented an incompleted biting act. When played out on dolls, he bit the anal regions. All his tics had to do with sucking, biting and sexual impulses. Another 8 year old (Case 20) was referred for a finger smelling tic, consisting of innumerable sniffings of his right index finger. This was related to an inhibited rectal masturbation and "played out" by inserting his finger into slits made in dolls.

In release therapy the interpretive function of the therapist is reduced to a minimum and may be absent, especially in children age 2, 3 and 4. In selecting cases for this discussion, some difficulty arose in classifying when interpretation appeared to be well mingled with a playing-out method. In cases of doubt, the method was considered interpretive-play rather than an acting-out technique (release therapy) and not included.

Examples of therapy without any interpretive activity are afforded by cases in which the play sessions are devoted entirely to release of destructive behavior, messy play and general "naughtiness." There are 23 in the series in which there has been no interpretation. The younger children, ages 2 to 5, were cured apparently without any knowledge of why they came or any relationship between the treatment and cure, so far as known. For example (Case 24), a girl aged 2 years, 9 months, referred among other things for tantrums in which she would remain mute for about half an hour, and general lack of responsiveness to affection. In the 19 sessions the activity consisted chiefly in throwing clay on the floor, stepping on it, playing with water, cutting, throwing and hitting objects, at times spilling water on the floor and sitting in it—generally a return to infantile pleasure and release of aggression. Throughout the sessions, notes from the mother indicated a general increase in affectionate response, a more outgoing quality and a marked increase in speech. Release therapy in this type of child, by overcoming anxieties that had to do with dirt, orderliness and hostile expressions, made possible an expansion of personality, presumably bound down by a discipline too early or too severe. The therapy is, then, a kind of dilatation process, designed to overcome a constricted personality. In such a case there is nothing to interpret. With the unfolding of personality, growth of the emotional life seems to be a rapid process. When release becomes inadequate and interpretations are felt to be essential, I don't know. I know certainly, in the older age group and in the more serious problems in younger children, as an exclusive or primary method, it does appear inadequate.

There are cases in which the important task of treatment is to give the child insight into its own motivation. In general, they represent cases in which the child is not suffering from the symptoms as much as from their exploitation. Inability to fall asleep for hours may be a symptom of anxiety, and hence be benefited by release therapy. It may, however, be a method, regardless of how it came about, by which the child, for example, exerts control over a parent. In the latter case, the play of this behavior through dolls is used chiefly as an aid to a simple insight therapy.

Again there are severe cases in which it is clear at once that the attitude of the child toward the therapist is too suspicious or too anxious to risk the rapidity of release therapy. Further, there are severe neuroses in children in which the problem of therapy is primarily psychoanalytic; in which free play and interpretive therapy are essential technical considerations.

Though "free play," in the sense of the child's own selection of material and methods, is part of release therapy, it is characterized by what may be called a control situation, in the sense that the therapist may select the material and depict the plot, as in the sibling rivalry situation. The therapist supplies the main actors and the dramatic situation. The child is encouraged to work with the plot selected, add whatever other actors or scenes he wishes, and keep the play going. The same method holds for free and controlled play—the use of skills to keep the action going, to surrender the therapist's interpretive art to that of fulfilling the child's own function in the play—to keep the play moving whenever possible to its natural dramatic crescendo. This applies, in a sense, even when methods of simple release are used as, for example, in repetitions of the act of bursting water-filled balloons—the repetitions are encouraged if need be until the child has apparently finished a cycle of activity. It is also important to stop quickly if any play is poorly tolerated, whether from anxiety or boredom, in fact, to stop all controlled play activity.

Release therapy may be used, of course, in combination with other methods. In using insight therapy, as previously mentioned, it may be wise to get release of feeling, especially of hostility, in a relationship play as a prelude to giving the child insight into the nature of his attitude. In various forms of psychoanalytic therapy it may likewise be used, as it actually is in certain phases. In Case 22, a boy aged 11 years, referred for impulsive, aggressive behavior, it was used for a short period only for the treatment of an eye-blinking tic.

The problem of handling the transference in release therapy, by which is meant the problem of utilizing the child's emotional response to the therapist, may be described in general as a process whereby the therapist enables the child to fulfill the therapeutic function of the play. From that point of view the therapist supplies the child with a safe stage on which to perform, the child's performance with the material being the assumed primary activity in this particular form of therapy. Naturally, this is possible only when the relation with the therapist is, at the least, sufficiently secure for the child to tolerate his presence in the playroom, to accept his activity in the play to the point of utilizing material and responding to it. The means of overcoming anxiety in the play is the momentum of the play itself as it is aided by the skill of the therapist in gauging the child's tolerance of the situation depicted, and in representing himself to the child as an adult who permits, in fact, who enthusiastically endorses the behavior released in play.

The most common form of activity on the part of the child with the therapist is to attack him in various ways. The child will, for example, spill water in his direction, threaten to throw things at him, in fact actually attack him. When such behavior occurs only occasionally, or playfully, nothing is made of it. When it seems important, dolls are used as in the play to depict the examiner on whom hostility can be spent in a manner similar to other play performance. Ordinarily, a direct attack on the examiner is forbidden and prevented by physically restraining the child if necessary, since the rule of the playroom is that the examiner be spared. At times this is interpreted as, for example: "You are angry at me because the brother smashed the baby." Such interpretation need not necessarily be made. When the child attacks an object, as in the sibling rivalry situation, and says, "You made me do it," I sometimes say: "Yes, I gave you the dolls to play with." I am not clear myself as to when I feel the need of making the interpretive comment, but in attempting to recall my own feelings in these situations, I think it occurs when the child's anxiety seems more acute than usual and it seems best at the time to attempt to allay it by interpreting the behavior. When a child becomes free in water play, after several sessions of inhibited behavior, there is a typically joyous type of performance, almost invariably accompanied by humming or singing. At this stage it is very likely that the child will try to spill water on me. I will then forbid it, with the words: "No, you are not allowed to do it on me," which seems to work. I think the attack on me in such instances represents a freedom of play to such a degree that an attack on the forbidding adult is released, a representation of feelings toward the restraining parental world. The behavior of the child in this situation is quite unlike that in which the child attacks me after it has attacked a doll personifying a member of the family. The latter, as has been previously demonstrated, occurs especially at that point in the sequence of play in which self-punishing behavior may occur. It is a question at such a moment whether the therapist or the child itself will be attacked. When the examiner is attacked instead of the child, it represents, therefore, a projected self-punishment.

From the point of view of the transference problem, one can differentiate the simplest form of release therapy in which the child is intrigued by the play in the first session and evolves, in a way, its own therapeutic process, while the examiner stands by as a friendly property man who supplies the scenery for the stage and occasionally acts as prompter. Starting with a form of therapy in which the therapist has a minimal role to play, there are gradations of this role up to a maximum, when the forms of activity are largely in the relation to the therapist. When the transference problem as such becomes of major importance, the problem in treatment goes beyond the limits of release therapy.

It would seem that when the child leaves the playroom with little or no residue of anxiety, the examiner is liked. Otherwise he is disliked. This is clearly shown in Case 2, where the child reported to the mother that she liked the doctor after the third session, and that she disliked him after the seventh. Knowledge of these projections is of special value in a therapy of brief duration and gives a clue to gauging its tempo. In the case of the child referred to, the depiction of a traumatic operation in which her guilt about masturbation was involved seemed to change, temporarily, her attitude toward the therapist. The latter is, in that sense, made responsible by the child for its discomfort. It was easy thereafter to slow up the therapy, indicating that the child's manipulation of play material can be controlled as an instrument of releasing tensions more readily than direct interpretation which, once made, cannot be recalled. Interpretation requires more skill in regard to the method of verbalizing it, timing it properly, and knowing when and if the child is ready for it.

Typically, the child leaves treatment in a state of positive transference. One might anticipate a precipitation of the symptoms when the therapy is ended for a patient who is unwilling to stop. Actually, this does not occur. It may be due to the nature of the therapy, to its brevity, the minimum of interpretive activity and, especially, to the flexibility of the child's personality. In Case 10 the patient said: "I love to come and I won't get well. I'll keep on staying awake so I can keep on coming." Nevertheless, she slept through that night. In the last session she expressed regret at not coming and didn't see why she couldn't come any longer. I told her she was cured, and there was no reason for it. I would infer from the fact that in none of these cases was there a return of symptoms within the period of follow-up that the play itself was missed more than the therapist.

In general, one can differentiate three forms of activities of release therapy in the playroom. (1) Simple release, of aggressive behavior in throwing objects, or of infantile pleasures in sucking water out of a nursing bottle, spilling water on the floor, sitting in it and slapping it. (2) Release of feelings in standard situations, as in those depicting sibling rivalry, parents alone together, the nude boy and girl doll, and the like. (3) Release of feelings in a specific play situation set up to resemble a definite experience in the life of the patient.

Finally, in all these techniques it must be emphasized there are no pat formulae; the methods are modified primarily by the therapist's immediate understanding of the child's own response.

CASE SUMMARIES

In the following summaries the age of the child and the problem are given in the first paragraph, the number of sessions and general description of the methods of therapy in the second, progress and follow-up notes in the third. The cases are grouped according to the main referral symptom.

GROUP I

Cases 1 to 11 inclusive. Referred primarily because of night terrors or fears: 3 boys, 8 girls. Age range: 2 years, 5 months to 9 years, 1 month. Average number of sessions: 7. Follow-ups: 2 months to 5 years, 5 months.

Case 1

An only child, a girl, aged 2 years, 5 months, was referred because of night terrors, onset 2 days before referral. She awoke frightened and screamed that there was a fish in her bed and refused to go back. The next night she started shrieking and screaming when put back to bed, shouting, "There's a fish in my bed." By advice of the pediatrist this was ignored. She continued screaming off and on for 2½ hours. The night terror was related to a visit to a fish market on that very day. The fish merchant, who was fond of the child, lifted her up to see the fish.

A second complaint was stammering, which had its onset 5 months before referral, although speech had developed normally up to that time. The stammering consisted of a repetition chiefly of consonants, e.g., to quote the mother: "It was almost like agony in getting the letter out in 'hello.'" This would occur probably once every minute of conversation.

There were 10 play sessions in all. A fish made of clay was introduced in the second session. To the question, why was the doll afraid of the fish, the answer was that the fish would bite, and the fish would go "in here," pointing to her eye, her ears and, finally, to her vagina. A few days before the night terror the patient had inquired about sex differences after seeing the father naked. Other than the introduction of the fish in various parts of the play sessions, the method was chiefly to facilitate her own type of play, whenever a difficulty in the play occurred. For example, she saw finger paint and wanted to play with it. I showed her how, but she wouldn't touch it with her finger, nor let me put a dot of paint on her hand. She said, "No, no, I don't like that—dirty, dirty." By playing with it myself and getting her to handle it gradually, she got to prefer it, and started each session with "I want to do paint." She played with it very freely, messed it on the floor, and on her legs. Similarly with water play, she got to drag a chair to the sink, playing with balloons, squirting water, breaking a baby doll, the latter becoming a frequent activity in the last two sessions.

Following her first appointment there was no change in behavior that could be related to it. Fear of the fish left after the third or fourth session and the stammering showed improvement after the sixth, disappearing two weeks before the last session. A follow-up was made 7 months later. Improvement was maintained; patient was developing normally and making good contacts with other children. She remained an orderly child, though no longer so fussy.

Case 2

A girl, an only child, aged 3 years, 5 months, was referred because of generally fearful behavior, onset at 18 months of age; night terrors occurring on the average of once every 7 to 10 days, onset at 23 months of age. The symptoms were related to an accident at 18 months, laceration of the scalp requiring six stitches, done without anesthesia; otitis media at 24 months, requiring hospitalization and three paracenteses; and to a tonsillectomy at 30 months. Before the accident at 18 months, the child was "fearless and high-spirited." After the accident she became fearful and tense, though this improved until she was hospitalized for the otitis. Then she was fearful of everything and fought the nurses and doctors. Again improvement occurred, until the tonsillectomy, after which the night terrors became almost a nightly occurrence for six weeks, gradually diminishing to the frequency given at the time of referral. The patient attended a nursery school where she held tightly to her toys and did not join in the activities of the other children.

There were 15 sessions in all, covering a period of 6 weeks. In the first session she was quiet and timid. Of the activities presented—water play with balloons, clay, trains, amputation doll, and piercing partly blown balloons—she responded with enthusiasm only to the last item. One of her fears, that of being bitten by a frog, was introduced in the second session, and fear of torn objects treated by encouraging tearing activity and play with the amputation doll. A play of an operation was done in the third session and repeated in the fourth, fifth, seventh and several other sessions, until the original experience was played out in full. That the various fears arising out of operation and hospital procedures were related to fears about her masturbation was demonstrated by her own activities in the playroom; e.g., demonstrating how the frog scared her by putting its paw in a slit between a doll's legs, placing a tongue depressor in doll's month and then in its vagina, verbalizing the act in terms of her own masturbation and fears of the consequences—all repetitions of actual events during her illnesses and operations.

The grandmother reported that after the second session the patient asked her to play a game in which you put sticks in your throat. That night patient awoke in the dark and complained that she couldn't see. (Release of anxiety of operation.) Patient insisted on a light at night until session four, after which she no longer asked for it. For several days after the second session she played at home putting sticks in mouths of dolls. At the beginning of the eighth session the governess reported that patient was much more outgoing, talked more freely and was friendly with the children at school. The statement of the governess was confirmed in an interview with the mother after the ninth session. She added that the child's behavior was in marked contrast to previous behavior. The child now waked happily, gaily singing. She played many games of "frowing" things away with her mother. After the second session the child told mother I was like an uncle, a favorite uncle, and that she liked me. After session seven the child said she didn't like me. A report from school following session ten stated that the child was "amazingly different." An interview with the teacher confirmed the previous observation. The child, though friendlier to children and the teacher, for the first time displaying response to their "warmth," still did not play with the others. Four months after the last session the symptoms had not recurred. She was getting along well with other children at school, however was considered "too highstrung" to take a nap with them and during nap-time was put in a room by herself. Mother debated about returning patient to treatment on this account but did not do so.

Case 3

A girl aged 3 years, 9 months, the oldest of three children, was referred because of fears—of fire, of electric light plugs, of any person who limped, of the toilet in school and, on numerous occasions, of being touched. Onset was probably at 11 months, after accidentally breaking a toy, whereupon she scampered away and avoided that part of the room and all broken toys for several months.

Fears were related to a basic fear of being destroyed by touching, the kernel of all her fears, directly expressed by the patient. In the 4 sessions it was easy, through finger paint and water play, to carry her behavior into the breaking of objects. Play of mother touçhing the child's bed, and also play of burning paper in a steel basket were used. There were 4 sessions in all.

In the third session she pulled an electric plug from its socket, and had already given proof at home that she was free of all symptoms except the fear of fire. This disappeared after the fourth session. A follow-up conversation with the mother 21 months following the last session indicated no return of fears; she showed interest in playing with the objects previously feared except in one instance when, about three months following the latest session she avoided contact for several hours with a girl who had a cast on her leg, though thereafter she played with her freely. She was doing good school work and had made a generally good social adjustment. There was recent evidence of sibling rivalry with the brothers.

Case 4

A boy aged 4 years, 1 month, the older of two children, was referred because of night terrors, timidity with children, negativism and sibling rivalry. The symptoms were all of three weeks' duration (except sibling rivalry) and were precipitated by a fight with a companion in which the patient was licked. Night terrors had occurred a year previously and for one month following the birth of the younger sibling, a girl.

Patient was to leave for the country at the end of the week. There were daily sessions for six days, comprising sibling rivalry situations in which there was quick release of primitive hostility against mother, baby and breasts. Anxiety of falling into the toilet and crushing a baby doll that fell in, occurred in the fourth interview.

Night terrors stopped after the second session. Follow-up interviews, 9 months, 22 months, and 4 years, 5 months after treatment stopped, revealed a marked change in the sibling rivalry, first noted during treatment; a change from a jealous, hostile relationship to a protecting, friendly one. At school he became well adjusted, frequently exchanging home visits with children and showed good social initiative. School work was always superior. Negativism in the form of sulky disobedience and refusals were noted as modified in the first follow-up to amiable, reasonable attitude, which continued. Night terrors recurred for a period of about 5 weeks, three years after treatment, following a change of governesses and measles with delirium and high fever the first three days. They occurred nightly the first two weeks and gradually decreased in intensity and frequency.

Case 5

Girl aged 6 years, 3 months, the oldest of three children, referred because of refusal to "do anything outside of her routine." The difficulty, attributed to fear, was an occasional problem for several years. It became a very frequent one following a tonsillectomy, two months before referral. The fear involved strangers, going out of the neighborhood, eating in restaurants, or even of missing any item in the routine of the day. The patient's marked "methodical" habits were well recognized at the age of three. Bowel and bladder control were established by the age of one year.

There were 5 sessions in all, 3 sessions of sibling rivalry play and especially messy play with chalk, clay, water and finger paint. The patient enacted through dolls the pleasure of enuresis ("They wet the bed. They like to wet the bed. Now they have a water bed. They sleep right in the number one. They love it.") She scribbled on the wall, smeared paint and dirtied her clothes. ("This is a dirty room. We can be dirty here. . . . We don't care if we get our clothes dirty, do we?") In the sibling rivalry play she attained a performance of "mild to moderate hostility" in five trials.

At the end of the first session the mother noticed that patient was more relaxed. By the end of the third the patient went out places but at the end of the week again refused. The symptoms again cleared up after the fourth session. A follow-up with mother 6 months, and with grandmother 19 months after the last session showed maintenance of progress, increased social activity and outgoing quality.

Case 6

Girl aged 7 years, 3 months, third of four children, referred because of refusal to return and anxieties following visits to an ophthalmologist where she received orthoptic treatment for strabismus. The mother decided to stop all eye exercises but was prevailed upon, rather against her will, to consult a psychiatrist. Other problems revealed were a violent hostility to brother, age 4, so that it was dangerous to leave her alone with him, and a history of various fears, including nightmares, from age 3 years to 5 years, precipitated by seeing a legless man.

There were 6 sessions, consisting of sibling rivalry play, over a period of four weeks.

The mother came in for an interview after the second session, rather resistant to treatment. Following the first session (in which the patient played with amputation dolls), she screamed at the mother to get out of her room, told her father also to get out, and asked that the window be opened in her room, though she had kept it closed because of fear for several months. Mother asked the teacher, on the day following the first session, how the child behaved in school. The teacher, who knew nothing about the treatment, said the child appeared "radiant and relaxed." The father, who was seen a few days after the sixth session, confirmed the mother's statement, said that he himself was doubtful about letting the child continue after the "hysterical reactions" following the first session. After that, the child quickly became "more outgoing, cooperative and less rebellious." According to the mother, the patient told her spontaneously that she felt better on account of the treatment. Seen 12 months later, the mother confirmed the gains made and stated that the patient had been going willingly to the ophthalmologist. A follow-up 4 years after treatment showed that nightmares had occurred over a period of 4 weeks, a year and a half after treatment. Otherwise there had been no problem in social adjustment.

Case 7

A timid boy aged 7 years, 6 months, the older of two children, referred because of nightmares of six weeks' duration. He awoke every night sobbing, and recounted dreams of torture, chiefly of being bound and gagged. The nightmares were precipitated by frightening stories told to his class by a teacher, especially one in which two knights hammered nails through the hands of an innkeeper, nailing him to the door of his inn. His terror dreams were related also to an experience several months previously in which his companions bound him to a tree in the park and put an ant on his hand. The boys then left him. His nurse released him after he had been tied about ten or fifteen minutes. There were two episodes also in infancy in which he was bound in blankets for a paracentesis of the eardrums, without anesthesia.

Three sessions were used to play out the story told in the classroom, the episode with his companions and his dreams.

The mother reported that he had a nightmare as usual on the night of the first session. There have been none since (a period of 5 weeks).

Case 8

Girl aged 7 years, 8 months, an only child, referred because of severe insomnia of 3 weeks' duration. In this period she also had night terrors on two occasions. Insomnia consisted of an inability to fall asleep for a period of from 3 to 5 hours. A week before referral she was put on 3/4 grain luminol without any effect. Onset occurred after seeing a frightening movie.

There have been 5 sessions in all. The frightening event in the movie had to do with a scene in which a child released a trapdoor on which the "new" prima donna was dancing. The prima donna fell through the hole to the floor below. She became a cripple. In the movie the child took revenge because the old prima donna, whom the children loved, had been displaced by the new one. This feature of the movie was played out in various versions in the first session. It was clear that the fear response was determined not only by the situation itself but by the child's hostility to a governess, her mother, and the stepmother. The child is still in treatment. The remaining 4 sessions consisted of simple release of destructive behavior, and control situations involving the usual family relationships. Luminol was stopped at the beginning of treatment.

The child slept through the night after the first session. Since then there has been no difficulty excepting for two nights when the child had a cough and fever. The patient has been two weeks in treatment.

Case 9

A hemiparetic girl aged 7 years, 8 months, the younger of two children, was referred for night terrors with screaming, observed successively two nights immediately before referral, and after returning home from a camp in which the children teased her because of her physical inadequacy.

There were only 2 treatment sessions. In these the patient attacked, scolded and insulted rag dolls representing her chief tormentors at camp, and finally destroyed them.

The night terrors did not occur after the first session nor subsequently for some months. Five years, 5 months after the event the mother could not recall any recurrence, though was not sure of a repetition on rare occasions. She stated that she had used the method herself a few times when the child appeared anxious, with beneficial results.

Case 10

Girl aged 8 years, 9 months, the youngest of three children, referred because of night terrors, occurring one to three times nightly, and resulting insomnia, since it took about a half hour to an hour before she would fall back to sleep after awakening terrified, at times screaming.

Since the night terrors were, by inference, thought to be due to the loss of a governess, on the basis of the time relationship and the one dream recalled in which the governess was run over, the sessions were all begun with control situations, chiefly depicting a governess leaving her charge. Other than the control situations, which took about the first half of each session, the patient played with balloons, squirting them from a distance, biting into them and spilling water over the floor. There were 7 sessions in all, over a period of 4 weeks.

Mother reported that the night following the second session was the most disturbed the patient ever had. She awoke screaming and whimpering every few minutes from 10 P.M. to 2 A.M. In the second session, a sibling rivalry play, she released primitive hostile behavior toward mother and baby doll, which I pointed out. She denied any feeling of hate saying, "Mother told me I shouldn't have any thoughts of hate." After the next session the mother reported an improvement in that the patient, though waking as frequently as before treatment, fell asleep very quickly afterwards. A report both by mother and patient indicated that there was no sleep difficulty in the last week of treatment. The patient slept through the night and had gained six pounds in the past two weeks. A follow-up 2 months after the last session indicated that the patient was sleeping soundly, with no night terrors.

Case 11

Boy aged 9 years, 1 month, oldest of three children, was referred because of numerous fears, onset at age 2½ years. The fears were of "anything gruesome," of sleeping alone or in the dark or in a closed room. The patient ran out of a movie in a panic when a scene of a guillotine was displayed, 3 to 4 weeks before referral. There were other complaints—bullying behavior toward his younger brother, marked sensitivity to criticism, excessive demands for attention, difficulty in making friends—in general, the behavior of a spoiled first-born.

The treatment was directed primarily to the fears, for which the patient was referred, without regard to the general problem. The parents preferred this limitation in therapy—which offered an experiment in determining the effect of a limited dynamic therapy on the permanence of cure and on substitution of other symptoms, in case a cure was effected. There were 10 sessions over a period of 6 weeks. His play activities were directed to playing out situations involving his fear of the guillotine, a dream he had of dancing decapitated skeletons, a control situation of a boy seeing a naked girl, and a sibling rivalry experiment.

In the sixth session the patient announced he was sleeping better; he had slept through the last three nights instead of waking up several times. In the tenth session he said he had been sleeping alone without fear the past week. Seen a week after the latest session the parents confirmed the absence of fears, and stated that the other problems remained the same. Eleven months later the mother reported that except for two nights in which patient kept the door of his room open, there had been no recurrence of fears. Seventeen months after the therapy the mother reported no recurrence of fears, and came to refer the patient for the other problems. Patient is again under treatment. Since the method used is not primarily a "release therapy," it need not be described. The fears, however, for which the patient was referred are still absent (except for the occasion noted) 22 months after treatment.

GROUP II

Cases 12 to 17 inclusive. Referred primarily because of speech difficulty: 6 boys. Age range: 2 years, 2 months to 10 years. Average number of sessions: 20. Follow-ups: present date to 4 years, 5 months.*

Case 12

Boy, aged 2 years, 2 months, an only child, referred for stammering and a generally fearful attitude of one week's duration, following an episode in a nursery school in which a boy attacked him, slapping and scratching, on two occasions—apparently the patient's first experience of that type.

The 4 sessions which constituted the therapy represented various attempts to overcome his anxiety in any type of play involving destructive behavior, through breaking and stamping on clay, throwing and hitting of objects, squirting water, and aggressive solution of the original experience through play with dolls, representing himself and the assailant.

The mother reported an absence of stammering and of anxious expression after the third session. Observation of the child and interviews with the mother, father and nurse on two occasions, 1 and 2 years respectively following treatment, indicated normal development and continued absence of the symptoms for which the child was referred.

Case 13

Boy aged 3 years, 8 months, the older of two children, referred because of infantile speech. The mother said patient had previously been examined by a neurologist, who had his hearing examined by the audiometer with the result that partial deafness for high velocity sounds was found. There had been some speech training for a short time. Patient showed no hearing difficulty when tested by the usual methods. He was right handed in almost all tests, and right eyed. His first words were spoken at 10 to 11 months, and speech progressed for the next few months, to stop entirely over a period of 6 weeks, when he was ill with glandular fever. Speech started again at 16 months and after that, though his vocabulary was adequate, he spoke indistinctly, saying "oo" for you, not pronouncing "f," "l," "ing," "k," "th," or "g," e.g., "dough" for go, "tan't" for can't, "dis" for this, etc. Other problems included hyperkinesis, fear of the dark and sibling rivalry. The younger sibling, a girl, was 20 months old at the time of referral.

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* Two cases are still under treatment.

Sibling rivalry play was used in the early sessions and featured by regressive behavior (diapering, washing, etc.) followed by a high degree of destructive behavior with the sister doll. His pronunciation was distinctly improved by the fifth session. In his play in the eleventh session he made a game of eating the baby, putting the dismembered parts in a glass and trying to urinate in it. The first series of 14 sessions ended in May, with apparently no speech problem. Judging by the type of play, the original inadequate speech progress was related to regressive rivalry.

He was seen for a check-up 6 months later. Speech was distinct and he pronounced words correctly. The sibling rivalry problem was much improved and the children played well together. In a follow-up interview 11 months after the fourteenth and latest session, the mother said patient was developing "tremendously," was learning to read through his own interest, and was less excitable. At school, the first month, he had difficulty adjusting. He would grab things from other children and appeared to be excited. After that, he made a good adjustment.

Patient returned to treatment a year after the first series of 14 sessions, because of fear of the dark and of death, and obsessional rituals, the latter relating to the position of slippers, potty, etc., with violent protest when any change was made and refusal to go to sleep unless the change was corrected. The rituals were related closely in time to a tonsillectomy. The fear of death was related to the death of his grandfather. There was no return of the speech difficulty. His relationship to the sister remained improved.

Sixteen sessions followed the next year. Meantime the sibling rivalry problems increased through definite admiration of the pretty sister by all visiting grown-ups, who completely ignored the patient, and also through the sister's own provocative behavior and the nurse's distinct favoritism. The second series of sessions was featured by water play with boats or tunnels, definitely related to birth and death.

A follow-up interview 5 months later with patient and mother indicated that the symptoms which had cleared up in the latest two sessions remained in abeyance. The relationship with the sister had improved.

Treatment of the sister 2 years later precipitated a sibling rivalry problem anew, for which 6 sessions of treatment were given, chiefly of sibling rivalry situations.

A follow-up interview with the mother 5 months after the latest session and 4 years, 5 months after the first series indicated excellent school progress, good social relationship, and absence of symptoms of fears or rituals, or speech difficulty. Relationship with his sister shows that he has strong influence over her. There is occasional teasing.

Case 14

Boy aged 5 years, 1 month, an only child, referred for stammering, onset at 2½ years of age. Patient had had good speech for about 12 months before stammering began. Previous to referral, he had phonetic treatment for a half year without effect. There were complaints also of occasional night terrors and bedwetting. Stammering consisted of the usual first-syllable repetitions. Patient was right handed. Stammering was thought to be related to the mother's divorce, since it followed within a few weeks, and to his readjustment to the stepfather, intensified by the mother's pregnancy at time of referral. Any visit to the father intensified the stammering for one to two days. Stammering was much more prevalent when speaking to his mother than to children or others.

So far there have been 15 sessions of play therapy consisting chiefly of destructive play with forts, garages, soldiers, pistols, water balloons and throwing of objects. A sibling rivalry experiment produced, after initial inhibition, marked destructive behavior. Any reference to the mother's pregnancy was followed by wild attacks on objects and on examiner, which had to be forcibly stopped.

An interview with the mother and stepfather a day after the 13th session indicated much improvement. In the play sessions there was no stammering except when he spoke about the mother's remarriage and her pregnancy. Patient is still in treatment.

Case 15

Boy aged 6 years, 1 month, the younger of two children, referred because his speech was "confused." There was no stammering or difficulty in pronouncing words, but during any excitement he was unable to recall the word he wanted and instead gave a descriptive version of it, e.g., "a round thing," when he wanted to say a boat. The school described his difficulty also as confusion and difficulty in expression. Though his first words were spoken at 12 months, there was definite delay in the formation of phrases, probably to age three. At three years a psychologist observed some clumsiness. Various test procedures indicated adequate intelligence (Stanford-Binet IQ 104), confusion of letters, reversals in reading (Monroe-Orton), incomplete hand and eye dominance (handedness tests and manoptoscope). Speech was more indistinct than confused. Physical examination revealed a slight heterophoria, clumsiness in manipulation of small objects, but no organic signs of incoordination. He had attacks of asthma. The mother complained also of a sibling rivalry problem with the older sister.

For the next two weeks tutoring in reading was tried without psychotherapy. The psychologist decided that progress was too slow because of obvious emotional difficulties. Thereafter psychotherapy and reading tutoring went on concurrently, the latter continuing afterward for three months. A sibling rivalry play was tried in the first session. He became quite interested and active, revealing strong destructive impulses and strong anxieties, e.g., after amputating mother doll in the first trial, saying while reinserting the parts, "That was a dream, the mother's dream. She dreamed she got killed. When she woke she was there." The first four sessions consisted of sibling rivalry play. In the fifth session and thereafter, the method consisted in facilitating his own free play activity. This had to do with play of clay as feces, and water as urine, used as weapons of attack and as pleasurable activities with the mother and sister doll; regressive infantile play and, finally, a return to "free" sibling rivalry play with attacks chiefly on the father. There were 33 sessions in all, over a period of 10 months, with an intervening vacation of four months following the third session.

Seen 2 months after the latest session, mother noted marked improvement in speech, increased initiative, better coordination and persistence. A detailed school report at the same time stated: "Very great improvement. Longer, more profound periods of concentration. Greater interest and effort. More relaxed, quieter and less quarrelsome," etc. They noted also marked improvement in reading. A follow-up 9 months after the latest session confirmed the previous findings. The asthmatic attacks remained. The Stanford-Binet IQ, 3 months after the latest session, was 119.

Case 16

Boy, an only child, aged 6 years, 5 months, son of a stammerer, was referred for stammering, onset at age three. The stammering consisted of "a spasm in getting out the word" though, when finally spoken, its first sound was usually not repeated. He had been previously treated from age 3½ to 4½ by speech training methods. He improved for a year and then relapsed. Patient started speech bilingually—French and English. There were complaints also of sensitivity to criticism.

The method of treatment was primarily, though not exclusively, a release therapy. It was a combination of control situations (sibling rivalry and the "cave"), free play and free drawing associations. Patient was seen about once a week over a period of 7 months; 24 sessions in all.

No stammering was heard in the last three weeks of treatment. A letter from the father also noted marked improvement in that period. Follow-ups 3 years, and 3½ years after the last treatment session showed improvement maintained, with occasional mild stammering.

Case 17

Boy aged 10 years, youngest of three male siblings, referred because of stammering of about five years' duration. The stammering—speech hesitations and repetitions of first syllables—had been of variable frequency, with periods of freedom for as long as one month. Speech had always been rather indistinct. There were no other complaints, also no reading difficulty. The patient was distinctly right handed.

So far there have been 33 sessions; the first nine devoted to drawings, since he expressed a preference for that kind of activity, and associations to them. They were concerned chiefly with airplanes bombing towns, and other scenes of war. At the tenth session, activity was changed to playing out these scenes instead of drawing them, and thereafter his activity was chiefly in demolishing forts made of wood blocks, and soldiers; later destroying balloons by distending them with water and piercing them.

The mother reported, in a telephone conversation following the 22nd session, marked improvement, more talking and generally more independent behavior. Patient is still under treatment.

GROUP III

Cases 18 to 22 inclusive. Referred primarily because of tics: 4 boys, 1 girl. Age range: 5 years, 11 months, to 11 years. Average number of sessions: 14. Follow-ups: 3 months to 2 years, 8 months.

Case 18

Girl aged 5 years, 11 months, the younger of two children, referred because of an eye-blinking tic of five months' duration. There were also occasional temper tantrums related to sibling rivalry with her brother, and difficulty in social adjustment due to dominating behavior.

Treatment was directed to the tic and limited to 5 sessions over a period of nine days. Since the tic was thought to be a symptom of repressed sex curiosity, a control situation was used in each session, comprising two amputation dolls in bed and a third, a sister doll, looking on. Play was introduced with the words: "The baby comes in and sees the mother and father in bed together." There were eight trials. In each she elaborated the play by adding various toys. At first, representing the baby as wanting to get into bed to be warmed by the mother, to be protected from the dark; she next observed the "tiddies." "She says: 'Mummy, I didn't know you had a machine gun. You shouldn't say machine tiddies for a machine gun.'" She represented various attacks made on her by the squirting breast, and her fear of getting into bed and taking the mother away from the father. In the fourth trial she placed the mother and father with their hands together and wondered why. Using various animals, she talked and acted out their being naked, using the toilet, expressed fears of falling in, and then looked into various drawers in the play cabinet. After much urinating play with animals, she represented the parents as "making pee-pee on each other," squirting them with water. The fear of looking into the bedroom because the mother would put her out to prevent her seeing their urinating on each other, and much messing with water and clay comprised the activity of the fifth session.

Mother stated at the end of the second session that the eye-blinking had lessened and at the end of the fifth session that it was "fast disappearing." The child went on a summer vacation. Since the tics disappeared she was withdrawn from treatment. At the time of treatment the parents had been divorced nine months. The sex curiosity was thought to have been stimulated by the problem of the separation. A follow-up interview with mother 32 months after the last session indicated that the tics recurred after a period of 21 months, when the mother remarried. It continued for 2 months and then disappeared; has not recurred in the past 9 months. Patient was resentful and jealous of the stepfather and had special difficulty in adjusting to the remarriage in the period of the tic. Since then adjustment has improved. Social relationship with other children has improved. School progress is good.

Case 19

Boy aged 6 years, 4 months, referred because of a coughing and throat clearing tic of six weeks' duration. It began at a meal which he refused to eat, saying, "Oh, I'm going to get sick. I got funny feelings." Several physical examinations at the time revealed no organic difficulty. Since onset the patient appeared "unhappy" in contrast with his 4-year-old brother who was always "happy-go-lucky." The mother complained also of the patient's moods of sullenness. Patient was well adjusted in school (Grade I), did good work, made friends readily and was always very nice to his brother, though he told tales about him to his mother and the governess.

The tic, originally a type of gagging, was assumed to be related to a sibling rivalry situation, because it was especially pronounced when the mother was present and because the brother was receiving more favorable attention than the patient from the mother and grown-ups. Of the 9 play sessions, 6 were concerned with the sibling rivalry situation (11 trials). The latter were featured by frequent repetitions of attacks on baby and mother, using also the device of preventing the growth of the baby by removing the breasts. Strong evidence of anxiety in releasing hostility was shown by frequent self-punishing and restoring activities, the use of symbols, of magic, and of anxious defensive manoeuvers. Other than sibling rivalry play his activity centered on play with water and finger paints.

During the second session he said he "made up" the cough. It stopped after the sixth session. A follow-up interview with the mother 20 months following the last play session indicated that since treatment a change in the throat clearing tic had occurred in regard to intensity and frequency, occurring now only occasionally and in periods of excitement. The patient was happy, well adjusted in school where he was making excellent progress, very enthusiastic about camp and good in sports. Relationship with the brother was good; moods of sullenness were no longer evident.

Case 20

Boy aged 8 years, the younger of two children, referred because of a finger-smelling tic of two months' duration. He was also afraid of the dark and had a light on before falling asleep; duration, indefinite.

There were 13 sessions over a period of three months. The tic was related to rectal masturbation, fear of damaging himself by finger insertion, and fear of paternal punishment. When I inserted my finger up a rubber doll's anus he said anxiously, "No, no, not so far!" Therapy consisted of allaying verbally his anxiety about the masturbation and chiefly play at putting his finger through slits in dolls, reproducing in play punishment by the father, encouraging his own play of soldiers in tunnels and of play in the dark with me.

The tics and fear of the dark were absent by the sixth session; still absent according to the mother and governess, seen 12 months and again 20 months later.

Case 21

Boy aged 8 years, 11 months, the second of three children, referred because of tics and talking in his sleep. The tics were eye-blinking, coughing, and sudden wide opening of the mouth. The sleep talking was accompanied by sitting up in bed, making fighting movements, with appropriate words. Symptoms began shortly after a sinusitis, two years previous to time of referral. Irritability, temper tantrums, and annoying the older sibling, a sister, were added complaints.

By having him use dolls to imitate his mouth-opening tic and explain what it wanted to do, and similar methods, it became clear that the tics were related to sex curiosity and to sucking and biting impulses directed to the mother's body. The sleep-talking was related chiefly to sibling rivalry and to problems of aggression in school. It was evident from the anamnesis that the patient had a strong attachment to a rather apprehensive and protective mother. The latter, however, was not treated. The 42 sessions, consisting of play situations introduced at most of the sessions in the form of sibling rivalry, boy and naked girl, boy in the room of his mother, and free play, chiefly of forts and battles of soldiers.

In the eighth session the patient announced that the mouth-opening tic was almost gone, and in the tenth that it was gone. Patient's statement was confirmed by the mother and teacher. An interview with the mother after the twelfth session confirmed the finding that the mouth tic had disappeared, that the cough and blinking were much improved and that patient was generally less tense. The sibling rivalry problem remained, however. In a follow-up 2 months after the latest session, the mother reported that the tics, which had been absent in the last few sessions, were still absent, and that the school reported general increased "steadiness" in work and in relationship with boys. In a follow-up 9 months after the latest session the tics were reported as still absent; 2 months later the mother reported that the coughing tics had returned for a few days and disappeared. She complained of his exasperating need of her attention. Twenty months following the latest session, mother reported generally disturbing behavior due to disobedience and demands for special attention; return of the eye-blinking, though now only occasionally. He was returned for treatment 2 months later, but as he fought hard against resuming, it was decided to forego it. (Patient was then age 10 years, 11 months.) Four months later (24 months after treatment) mother reported that the eye-blinking had disappeared spontaneously four weeks previous.

Case 22

Boy aged 11 years, the older of two children, referred because of impulsive, aggressive behavior, for which he had been expelled from school. Release therapy was not used in the main. However, the patient had an eye-blinking tic which was treated symptomatically by release therapy for 3 sessions.

Tic was related to suppressed sexual curiosity about the mother's, and later, any female body. Control situations depicting a nude boy and nude girl doll were used. He also made drawings of the nude female figure. Patient himself suggested the method of looking at photographs of nude models, which was done.

The tic disappeared after the third session, to return after six months, following a visit from his mother. (Mother was divorced and saw patient on rare occasions.) The same method as previously was employed, using the control situation: "invisible boy in the room of his parents." The tic disappeared the next day and has been absent the past 3 months.

GROUP IV

Cases 23 to 26 inclusive. Referred primarily because of temper tantrums or negativism: 1 boy, 3 girls. Age range: 2 years, 3 months to 10 years, 2 months. Average number of sessions: 11. Follow-ups: 2 months to 4 years.

Case 23

Girl aged 2 years, 3 months, the younger of two children, referred because of severe temper tantrums of the usual kicking and screaming variety, first noted when she was placed on the pot at 12 months. Bowel control was established by 20 months, bladder control 2 months before referral. There were complaints also of general tenseness, negativism and lack of affectionate response to her four-year-old brother. It seemed clear from the anamnesis that the child had been over-disciplined. A general release therapy was therefore utilized.

There were 10 sessions in all. Her activity, rather resistant in the first three interviews, became freer in the fourth, and distinctly so thereafter. Most of her activity had to do with clay, manipulating it, knocking down clay figures, frank representation of it as feces in the later sessions, smearing it over the desk and walls; also much tearing and cutting activity.

Following the first interview, patient hugged her brother and thereafter displayed spontaneous and shifting outbursts of affection to him and the father. On the day following the fifth session patient started soiling herself, sitting in her feces as long as an hour at a time. This continued for ten days. Free laughter and boisterous behavior was first noted during the eighth session, coinciding, according to the mother, with lessened negativism and tenseness, freer play with the brother, and generally becoming "a lighter and gayer child." Evidence of freedom from anxiety about putting things all back in their places occurred in the tenth session. The fourth and latest follow-up, 4 years after treatment, indicated that improvement was maintained—very good adjustment in school, socially and intellectually. The relation with the father, after a period of marked improvement, showed occasional difficulty in terms of "sulky behavior."

Case 24

Girl aged 2 years, 9 months, second of two children, referred because of headbanging (without temper tantrums), shyness, daily periods of anger in which she would be mute for about half an hour, lack of responsiveness, nocturnal enuresis and marked jealousy of her brother.

There were 19 sessions in all. In the initial session, the patient at first refused to accept any objects, or to sit down. Later she put back in place every object she used; avoided stepping on a mat and corrected the position of a chair. After every act of aggression towards play material she would call for her governess. In the first four sessions it was necessary to precede her activity with my own before she would throw clay or step on it. In the fifth, she came into the playroom without her governess, whom she previously insisted upon having. The first instance of spontaneous play and laughter occurred in the sixth session. The first instance in which she spoke freely occurred in the tenth. Behavior in the 19 sessions was featured by release of distinct anxiety in getting herself or things dirty or disorderly, playing with water, cutting, throwing or hitting objects, and her relationship with me.

Information from the nurse and mother two weeks after the fifth session indicated that bedwetting had stopped after the fifth session and the headbanging and negativism were much improved. There was the same information from the nurse at the beginning of the eighth session and, at the same time, report of rapid increase of vocabulary and speech. In an interview with the mother on the day preceding the twelfth session (7 weeks after treatment began) she reported that the child was now outgoing with people, talking freely to them, whereas previously she was withdrawn and silent; there was expansion of speech, she was generally happier; there was a marked reduction in frequency and severity of the headbanging. Her relation to father and mother had become more spontaneous and affectionate, e.g., regularly coming to mother's room, which she had rarely done before treatment. She became more aggressive with her brother, slapping him, for example, in the past week when he annoyed her, her first defense against his aggression toward her. Mother said in a telephone follow-up 8 months after treatment: "You wouldn't know her now. She's developed such charm and personality. She adjusts well. All the opposite of last year." There was still occasional headbanging. A follow-up 17 months after treatment indicated that improvement was maintained. No enuresis since the last notation (after the fifth play session). Headbanging occurred rarely; good relationship with the brother, though aggression was displayed by frequent "accidental" breaking of his toys. There was evidence of good adjustment to new situations, for example, when the child had to be put up at a hotel during the brother's illness and during a change of schools. Her disposition was described as "cheerful and gay." A follow-up 32 months following the last treatment session indicated that the good adjustment was being maintained. Headbanging still occurred occasionally.

Case 25

Girl aged 5 years, 2 months, the younger of two children, referred because of negativism, undue sensitivity, difficulty in making contacts with other children and a dependent relation with the older brother (age 6 years, 10 months), refusing to let him be with any other child, and resistance against feminine interests. There was a history of maternal rejection, followed several months previous to referral, and as a result of the mother's own insight, by an attempt to show constant affection.

After several sessions of release therapy there was evidence of change in that the patient showed more initiative, obedience and generally more responsive behavior. Patient was then withdrawn from therapy but referred again four months later because of a period of mutism of eight days' duration. During the next month of therapy, there were several similar periods though of briefer duration—several hours to several days. The first period of mutism occurred when the patient and her brother were ill in separate beds. The mother was reading a story to her son and the patient felt left out. Patient's speech began rather late, probably at 20 months, and for several years was indistinct. Seen in the ninth day of her period of mutism, the patient did not talk but responded to any suggestions for play. Simple release of destructive play was chiefly used. She spoke that afternoon. Since the history revealed a strong penis envy the sessions were chiefly in the form of sibling rivalry and of sex difference. There were 7 sessions in all, over a period of one month.

A follow-up 1 and 2 months after the last session indicated no recurrence of the mutism and general improvement. The mother continued reassuring patient of the advantages of being female.

Case 26

Boy aged 10 years, 2 months, the second of two children, referred because of temper tantrums, onset a year before referral. In his temper tantrums, he once smashed a vase and once threw a knife at a maid. In the year preceding referral there had been three temper tantrums of such violence. He also had periods of general "antagonistic" behavior, quarreled frequently with the older brother and friends and showed much jealousy of them. Both parents were rather averse to treatment, out of fear that the patient would consider himself abnormal, the father also out of pride.

Patient was withdrawn from treatment after 9 sessions. Three sessions, chiefly of sibling rivalry play and "playing out" a night terror dream he had, were featured by marked hostility to the brother and the father, and a fear of separation from the mother.

In a follow-up conversation with the father, one year and 11 months after the last session, he reported that a marked improvement had occurred within a year after the time of the treatment. The patient still showed evidence of over-attachment to the mother. He was then in boarding school and doing well. There was no evidence that the improvement had any relation to the therapy.

GROUP V

Cases 27 to 29 inclusive. Referred primarily for denial of femininity: 3 girls. Age range: 5 years to 7 years. Average number of sessions: 16. Follow-ups: 9 months to 6 years.

Case 27

Girl aged 5 years, youngest of three children, referred because she refused to be a girl, cut off her curls, insisted on being called by a boy's name, and fought against wearing girl's clothes. The difficulty started when she was about 4 years old and was related to jealousy of a boy of her age who showed off his strength to her and pooh-poohed girls; also of her brother, age 13, the next older sibling, whom her governess distinctly favored.

For external reasons it was possible to have only 5 sessions with the patient. These consisted chiefly of release of destructive behavior on boy dolls and a clay penis. In the fourth session she said that girls were better than boys; they could wear pretty things.

A follow-up one week after the last session revealed that the patient made no protest against wearing girl's clothes and stopped insisting on being called by a boy's name. A follow-up interview 6 years after treatment indicated normal feminine development.

Case 28

Girl aged 5 years, 7 months, younger of two children, referred because of refusal to be a girl, an attitude apparently intensified by a sibling rivalry situation. The brother, the other child in the family, was two years older. He pooh-poohed dolls, so she refused to play with them. She made a number of attempts to urinate like a boy when age three, insisted on wearing her hair short like her brother, refused to put a ribbon in her hair and objected to wearing girl's clothes.

The treatment consisted of 10 play sessions in all, over a period of eight weeks. In the first session there was generally free play, chiefly with water balloons. The second, third and fourth consisted of sibling rivalry situations. In the fifth and sixth a standardized play situation was used, depicting a play of dolls in which a girl sees a naked boy for the first time. In seven trials her activity consisted finally of destroying clay penises and inserting them on the girl doll.

As soon as she reached home after the first sibling rivalry session (4 trials) she ran to hit her brother, fought with him and screamed, "I won't be a girl, I won't be a girl, I want to be a boy." The first evidence of a change toward femininity occurred after the third session when she spontaneously asked for a ribbon to put in her hair. An interview with the mother after the sixth session indicated that the patient was "much happier and contented," much improved in relation to the brother, and accepted being a girl. An interview with the mother 9 months after the last session revealed that feminine development has continued in that there is interest in girl's clothes, in wearing curls, etc., recently even a special interest in a boy at school. However, she does not play with dolls but only games that the brother is also interested in, except weaving.

Case 29

Girl aged 7 years, second of three children, referred because of masculine tendencies—insistence on wearing boy's clothes and being called "Johnny," phantasy play of being a boy, refusal to play with dolls or sew. There were complaints also of being withdrawn from the group in school and of mind-wandering. Onset was at the age of 5 years, 5 months, two months after the birth of the baby sister.

The wish to be a boy, expressed in early sessions frankly as a wish to have a penis, a wish she insisted she would never give up, was intensified by rivalry with the older brother as well as the baby sister. Response to sibling rivalry was also in the form of infantile attention-getting behavior, silly giggling, especially in the presence of a parent. There were 16 sessions over a period of 2 months in the spring, and 7 sessions the next fall. They were started with a control situation at the beginning of the first 5, in which a play of dolls was produced demonstrating a girl seeing a boy and his penis. From the control situation she went on to water play, chiefly squirting water out of a syringe and balloons into the sink, later onto the wall. In the fifth session she put many clay penises on dolls and squirted them off. In the sixth, she placed a rubber syringe between her legs and said, "Now I can have a penis and be a girl." Her play consisted of much destructive activity on penises and squirting water from her own "play" penis. Such activity comprised 11 sessions. The remainder were given up to sibling rivalry sessions and miscellaneous activity.

A vomiting spell occurred a day after the third session, one in which she used the rubber bulb as penis and as a nipple. Instances of change as noted by the father after the ninth session in the third week of treatment were as follows: 1) patient was making a skirt for a cowboy suit, 2) had recovered her old interest in sewing and 3) told father not to help her arrange flowers, saying, "This is work for a lady." A note from mother stated that the teacher, who had no knowledge of the treatment, remarked that patient had changed in the previous month (second month of treatment) from disturbing and withdrawn to cooperative behavior. At the same time mother noted "backsliding" in the past two weeks in regard to masculine tendencies and also frequent lapses into baby talk and silly behavior. Three weeks later, following the twelfth session, both parents reported a return to femininity, marked improvement in regard to "being lost in a fog." The patient was "generally more realistic and pugnacious," but there were increased symptoms of infantile behavior—baby talk, baby faces and general disobedience. In mother's words: "the difficulties are all on the outside." Two days later (following a session of six trials in the sibling rivalry situation) the mother reported improvement in the symptoms noted. In an interview with mother in the fall, four months after the sixteenth session, she stated that improvement was maintained. Patient on the whole was "happier and had more direct contact with the world," attacks of "sillies" were less frequent, she retained her interest in knitting, though it was for a "boy monkey," and also showed interest in a doll. There was no protest about wearing girl's clothes, although she still occasionally expressed the wish to be a boy. There was a good relationship with the baby.

Further improvement was reported a month later. Eleven months following the latest session, mother reported that no problems in regard to femininity had occurred for months and that the symptoms of infantile behavior had practically disappeared. Patient had a good relationship with her brother and was developing a closer relationship to the father.

GROUP VI

Cases 30 to 35 inclusive. Referred for miscellaneous problems: 2 boys, 4 girls. Age range: 4 years to 10 years, 1 month. Average number of sessions: 41. Follow-ups: 6 weeks to 6 years, 9 months.

Case 30

Girl aged 4 years, an only child, referred because of vomiting of 10 days' duration, for which no organic cause was found. She appeared timid and generally somewhat inhibited in her behavior. The vomiting was related to an anxious nurse and cleared up later when a change of nurses occurred. However, release therapy was attempted because of her general timidity, although there were no special fears.

There were 8 sessions in all, of the general release therapy type—facilitating and encouraging activity of her own, and initiating aggressive play with clay (stamping, throwing), water, balloons and dolls.

Grandmother noted a change in that patient became "more outgoing," jollier, more assertive and independent, an observation confirmed by the mother in a follow-up 6 weeks after the latest session.

Case 31

Girl aged 6 years, second of three children, referred for bedwetting and difficulty in relationship with her two brothers, chiefly because they teased her. Nightly nocturnal enuresis had existed since early infancy, except for the summer months.

Treatment consisted of 13 sessions, 9 of them started with sibling rivalry play since some relationship was thought to exist between the enuresis and her play with the brothers. Sexual play with them was revealed, as well as masturbation and her belief that enuresis as well as danger was due to a lack of a penis.

The first report of progress came after the seventh session when the governess reported that patient had been dry for three nights. The thirteenth session preceded the summer vacation, after which the patient did not return for treatment. A telephone conversation with the grandmother, 10 months following the last session, revealed that enuresis had stopped following the seventh session, was absent throughout the summer and fall, returned for about two months in the winter and stopped in February. This information was confirmed by the family physician. A follow-up interview with the father 4 years, 8 months following the seventh session of treatment revealed that enuresis had not been a problem since the last notation, that patient had a good relationship with her brothers, was popular and very good in her studies. Patient's mother had died three months following treatment and the father had remarried. Patient made a good adjustment to her stepmother, to whom the father ascribed a good deal of her progress.

Case 32

Boy aged 7 years, 3 months, IQ 94, third of three children, referred because of epilepsy. Various neurological examinations were negative. Previous treatment with ketogenic diets and sedative medication had failed. Release therapy was attempted as an experimental procedure, with medication (bromides and luminol). Major and minor convulsions occurred several times weekly.

There were 50 sessions in all. Patient was quite timid and methods of releasing destructive behavior were used especially. Since the attacks occurred invariably in pairs, that is, a major convulsion in the morning would be followed by one in the afternoon, three experiments were made immediately following an attack to see if simple release of destructive behavior would prevent the next one. Actually, the afternoon attack did not occur in the three instances. However, in general, there was no effect on the course of the disease.

An electro-encephalogram made two years after treatment showed "extremely frequent abnormal waves of the 'larval petit mal' type."

Case 33

Boy aged 7 years, 7 months, the older of two children, referred by a neurologist because of mental retardation. According to the mother, there was a normal developmental history. He sat, walked and talked at the usual time. There was no history of birth trauma, nor of any serious illness. Patient had never been separated from the mother for longer than an hour or two during his conscious life until she went to the hospital for the birth of the second child, when the patient was three years old. His reaction to the baby on first seeing it was so violent that the mother decided to conceal the entire activity with the baby from the patient. She succeeded for three weeks, then the patient accidentally saw the mother feed the baby at the breast. Thereafter a series of screaming temper tantrums followed in which he pinched and bit every member of the family. The baby was then ten weeks old and was changed to the bottle so the grandmother could feed it and enable the mother to be with the patient. On several occasions the patient took the baby's bottle, sucked it, and tried to get in the baby's carriage. He never struck the baby until it was a year old, when he tried to pinch and bite it. Thereafter there was a speedy deterioration. Patient scored a mental age of about 3 to 4 years on various psychological tests when age 7 years. A psychiatrist, friend of the family, who had observed the child from birth, noted that deterioration occurred at the age of 2 or 3, and noted his gradual increase in seclusiveness, inattention and violent temper tantrums for no obvious cause. He noted also bizarre mannerisms, periods in which he would refuse to drink water, saying that it was dirty, sudden clapping of his hands and slapping the side of his head. His usual behavior was to sit quietly as though daydreaming, making grimaces, with sudden outbursts of laughter as though in active phantasy. Several neurological examinations were made near the time of referral and revealed no organic lesion.

Release therapy was tried as an experiment, chiefly in the form of simple release of whatever activity he manifested. This was difficult at first, since his response to objects was chiefly to pick them up and suck or bite them. He responded to destructive play, to throwing of objects and the like. There were 120 sessions in all.

The therapy had a noticeable effect on certain evidences of negativism and the temper tantrums. He was also more responsive to conversation, in that he listened when the mother spoke and would go into distraction less frequently. There was practically no effect on the mental status. Referred to the Psychiatric Institute 1½ years after treatment, an electro-encephalogram gave evidence of encephalitis.

Case 34

Girl, an only child, aged 8 years, 1 month, referred because she was "terribly nervous and jumpy," i.e., actually jumping when excited, general choreoid movements and restless behavior. Onset in infancy. Complaints also of stubbornness and lack of concentration.

It became apparent in the first session that the child was hostile to her stepfather, the mother's second husband, married when the patient was 2½ years old. Play of mother, stepfather and child was her own choice and was encouraged throughout the 9 sessions. Otherwise her play had to do with material related frankly with masturbation and urination, in which she displayed destructive behavior with dolls, cutting them up, pulling them apart, sticking an awl into the eyes.

After the fifth session the governess reported the patient was less jumpy, Though I had recommended that treatment continue, the grandmother and parents thought the child greatly improved and stopped after the ninth session. A telephone follow-up 19 months after the latest session indicated good adjustment in school and at home, without evidence of "jumpiness."

Case 35

Girl aged 10 years, 1 month, the older of two girls, referred because of inability to read. There were distinct personality difficulties present. However, since the parents were in transit, only 3 sessions with the child were possible. They were utilized to bring out feelings in regard to the mother, since it was clear from the history that the reading difficulty was a refusal to read on a rivalry basis. The patient had superior intelligence. There was no mixed handedness.

Her attitude was negativistic. Nevertheless, it was possible to intrigue her with play material. An amputation doll was represented as her sister. She made derogatory statements about her. Gradually hostility mounted, ending in amputation and throwing the parts away. Restoring the doll then followed. In the second session a sibling rivalry set-up was used, with a baby nursing at the mother's breast. Immediate hostile activity was released on the baby and mother. The hostile reaction to the mother was distinctly primary, that is, the baby was pushed away in order to get at the mother. At this point questions were asked about her methods of getting revenge on the mother. Refusing to read was one of the methods she gave. She frankly spoke about her jealousy of the mother, especially her jealousy of the mother's linguistic ability. The mother could read in many languages. She expressed her jealousy of any compliments paid the mother. It was discovered from the child that her governess was fomenting this hostility to a high degree, telling the child that the mother didn't like her, that she only (the governess) had affection for her. (This finding was later confirmed.) It was definite that the release of hostility was only partially fulfilled in the three sessions.

Within a week of treatment the patient showed marked progress in reading. Numerous follow-up contacts have been made—the latest 6 years, 9 months following treatment. Patient was doing well in college and had shown definite linguistic and reading skill, though distinct personality difficulties remained.

7

STUDIES IN THE INTERPRETATION OF PLAY: I. CLINICAL OBSERVATION OF PLAY DISRUPTION IN YOUNG CHILDREN*

by

Erik Homburger Erikson

A. Method of Representation

Our material is divided into *contacts* (visits) which in turn consist of *behavior items*. These items are described and discussed in five categories, *A, B, C, D, E,* which indicate the shifting foci of the analytic attention; their peripheries overlap.

A gives a common-sense description of what happens before the observer's eyes; *B* and *C* demonstrate (in slow motion, as it were) two concurrent tendencies in the observer's mental activity: *B* is directed toward a future exact description in areas which can also be explored and measured under other than psychiatric conditions; *C* toward the clinician's age-old right and duty to allow himself to be led by subjective factors. The reader should visualize the relationship of *B* and *C,* and their intervention between *A* and *D* in the following manner.

"A"

The "behavior item to be analyzed" represents as nearly as possible the span between the moment when we observe that the child has turned his attention to a toy, a person, or a conversational manner, and the moment when we notice that he turns to the next one. This is, of course, a crude concept of an "observational unit"; however, it is the one naturally used in a therapeutic situation in which the task is to infer from the *selective attractions and aversions created by a standard environment* what the patient's relationship may be to certain classes of ideas and thus to discover the pathogenic associations of his mind—which he may keep hidden, which may be unconscious to him, or whose reference and importance may not be understood by him.

"B"

Morphoanalytic description emphasizing the configurations manifested in four areas of behavior:

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*Reprinted from Genetic Psychology Monographs, 1940, 22, by permission of the publisher.

1. *Affective:* The patient's manifested emotional *interest in and withdrawal from* the object of the behavior item.
2. *Ideational:* Verbalized *content,* acted out *themes,* etc.
3. *Spatial: Configurations* and *modes* in the three spheres of representation.
4. *Verbal:* Mode of *expression;* speech, voice.

"C"

Observer's Impressions, Associations, and Reflections. While in *B* the therapist attempts an approximation of objective configurational analysis of what he sees and hears in the currently manifest, in *C* he *gives impressions* ("it was as if . . .") and *associates past impressions:* previous observation on the child in question or on other children, data communicated to him by the parents, etc.; and he *reflects on latent possibilities,* i.e., the possibility that his associations may correspond to a genetic or associative connection in the child's mind between what he is doing under the observer's eyes and what he is said to have done in other situations.

"D"

Psychoanalytic Interpretation.

1. His observational and reflective reactions lead the observer to various *interpretational hints.* A *symbolic equation* or metaphor may make it possible to recognize a play act as alluding to and *standing for an otherwise manifestly avoided* item (person, object, or idea); or a *play arrangement* may prove to represent a specific effort on the part of the child to rearrange "in effigy" his psychological position in an experienced or expected danger situation. Such an arrangement usually corresponds to the child's defense mechanisms.
2. If these first hints survive the sifting processes of further observation and investigation, they will sooner or later grow together and create a conviction and an image in the observer's mind in the form of the *reconstruction of a genetic sequence* or of a *dynamic configuration* pertaining to the patient's inner or outer history.
3. The observer may proceed to convey parts of these reconstructions to the child whenever he feels the time has come to do so. This then, is the *therapeutic interpretation.*

"E"

Confirmation of interpretation gained after the contact, and further speculation reaching out beyond the evidence offered by the behavior item.

B. A Six-Year-Old Boy's Secret: John

The observation of the first of our "specimens" led to the discovery of a later verifiable fact, namely, a conscious *secret* kept hidden from the therapist (and his predecessors) by both the child patient and his mother.

John is six years old and a sailor's child. Years of psychiatric investigation have failed to throw light on his impulse to soil himself when overcome by a strange state of rage and sexual excitement. This infantile habit in its importance for the environment has remained the center of a general emotional arrest and of a system of petty delinquency. The mental test shows traces of disintegration and extreme fatigue rather than retardation in his only slightly subnormal intelligence. When he is brought to my attention John is at a hospital where he has undergone (with negative results) an examination of his eliminative organs and an encephalogram; he has also been circumcised. Thus unlike all the other patients to be presented here, John is not brought by his mother. On the contrary (and this is a variation of our model "field situation"), the way back to his mother leads through a successful relationship with me, knowing, as he does, that I will have a word in the final decisions as to his placement, further treatment, etc.

The day before the first regular contact, John had been casually introduced to *Ps*.[1] He had a toy gun in his hand and a dagger at his side and had exclaimed, *"I am a cop."* When asked, *"Who are you going to shoot?"* he had replied, *"The bad guy." "Who is the bad guy?" "Me."*

Today *Ps* brings him some plasticine because he was told that John had been sad about the fact that none of the hospital toys were "his own." *Ps* therefore expected John to spend valuable time on the question of which of *Ps*'s toys he would be allowed to take to his room, a common technical problem which can be solved only from case to case and often is of diagnostic value in itself. However, *Ps* did not want to lose any time in this instance and assumed that once the ownership of the play medium was settled *Pt* would concentrate more quickly on whatever he needed to express. *Ps* also considered plasticine to be a fitting "support" for the phantasies of a child who soiled and played with faeces.

1. *First Contact*

John appears, armed again and looking pale, forlorn, and somewhat scared; he accepts the plasticine with surprised eagerness but without thanks, and immediately concentrates on making an "aeroplane," which, as he says with a shy smile, "brings people from across the ocean." This smile quickly gives way to serious concentration, during which he ignores *Ps* for a while.

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[1] *Ps* = psychoanalyst or psychiatrist, *Pt* = patient.

"A"

BEHAVIOR ITEM TO BE ANALYZED

Plasticine: Balls

John makes small *balls of plasticine.*
With three blocks he builds *a grocery store.*

"You are the grocery man; I am a truck driver." John fills the truck with the balls and then, elaborately and with a "motor noise" approaches the store, finally dumping the truck's contents into a corner. When asked, "How much does the grocery man owe you," John refuses payment (as if the delivery represented a present to the grocery man). This is repeated.

Suddenly he calls one plasticine ball *mother nut.* Then he takes a smaller ball of the same color and calls it *baby nut.* He then makes of another color plasticine a long row of balls equal in size to the first one and calls them *brother nuts.* "Whose brothers are they?" *"My mother's brothers."* "You mean uncles?" John becomes very pale, sways as if he were going to faint, and leaves the room hurriedly.

After a while he comes back, obviously from the toilet for he refers to his general state with the words, *"This is the way I feel when I soil." Ps* asks once more, "Now tell me, who are your mother's brothers?" John, with a desperate look, "Me."

"B"

MORPHOANALYSIS OF MANIFESTED CONFIGURATIONS

1. *Affect as manifested in interest and withdrawal:* The interest in the plasticine is first one of hungry *taking* into *possession.* Then follows a short period of quiet *play concentration* out of which suddenly emerges the idea for a *game.* The expression increasingly becomes one of eagerness to play in *co-operation with Ps* and to play *at giving him something.* At the height of this contact-seeking the phantasy of the nut family appears. Some implication of this phantasy then brings about a sudden and vehement play disruption: an anxiety attack and the symptom of sudden defecation make an end to play and game. (What is the dangerous implication of the nut family phantasy?)

2. *Ideational content:* (*a*) Balls are being made; (*b*) groceries are delivered without pay; (*c*) a nut family is represented which consists of a mother, a baby, and many "brothers." (What relation is there between balls, delivery, and the members of a family?)

3. *Spatial expression:* After having put aside his weapons and prepared the balls, *Pt* seeks intimate *spatial contact with Ps,* trying to win him for a game in which they concentrate together on the microcosmic elaboration of *Pt's* phantasies. This game is dominated by the configuration of *delivering and dumping.* After the disruption the autocosmic sphere takes the lead and the patient defecates.

It will be seen that the microcosmic play and the autocosmic symptom have in common the *eliminative mode,* the difference being that the balls are dumped as presents in the context of a general contact seeking, the faeces eliminated in anxiety, followed by a general closing up. (What is to be delivered in friendliness, what retained in anxiety?)

4. *Verbal expression:* (*a*) There is probably more than one meaning in the "nuts" which he delivers, the most obvious being that the family he has in

mind is "nuts"; (*b*) the "me" the day before manifestly expressed the "turning against himself" of the weapons originally intended for "bad guys." Today it turns my questions in regard to the uncles back to him. (Bad uncles in a crazy family? Who are they?)

"C"

Impressions, Associations, Reflections

John, apparently too starved for gifts to smile or express thanks, accepts the plasticine the way a hungry man reaches for food. (This "aeroplane bringing people from across the ocean" could be equally well associated with either John's absent sailor father or *Ps* whose accent indicated he had come from far away. Is this the beginning of a transference, i.e., does this express the need for a father?)

John has been described to *Ps* as a very friendly, accessible, and even voluble boy who craved for a good contact, especially with men. However, at a certain point he would always close up without any real understanding having been reached. When would he close up in the game with the balls which seemed to mean more and more to him as he proceeded?

He made balls, then seemed very eager to play in coöperation with *Ps* and to deliver something to him, a mode underscored by the refusal of payment which would naturally belong to the commercial play content. This "delinquent" boy who steals and hides what belongs to others and does not even give his faeces at the requested time wants to deliver something to *Ps* (a father substitute?).

The nuts turn into a family, a mother, and a baby. Is he homesick? One automatically expects next a father and a brother (to complete approximately the actual family constellation), but John lets about fifteen "brothers" follow who are different in color. The number makes *Ps* suspicious and he asks who they are. The answer, "mother's brothers" could still mean, for example, the many brothers which he expects his mother to produce now that she has started on that line. To make sure which kind of brothers he means, *Ps* gives him the term for a mother's real brothers.

The word "uncle" seems to hit him like a blow causes panic with organic symptoms, including the urge to defecate, and ends the game. "Uncles," of course, is not always a correctly used term, and the "different color" suggests that these uncles may not be real relatives, may be outsiders, strangers—John's father is a sailor and the mother has many nights without a husband.

After the disruption and John's return from the toilet, he had answered *Ps's* last question with "me"—just as he had done that day before when asked, "Who are you going to shoot?" In other words, when asked about the subject of admitted aggressive tendencies, *Pt* had evaded the issue by putting himself jokingly into the rôle of the "guy" whom he wanted to harm. Today, in a much more serious way, he acts as a victim (internalizes somatically) when asked for the identity of somebody who is characterized as "mother's *many* brothers" who in the play family appear in the *father's place* and cause panic when called *"uncles."* If our reflections point in the right direction, John has been made the victim (and has gone on making himself a victim) of an unbearable secret which he does not dare convey, namely, his mother's infidelity or maybe prostitution.

As to our expectation that in John's handling of the clay we would find expressed something of the retentive-eliminative problem which builds the basis of his main symptom, namely his untimely elimination of faeces: We see him all-giving where he plays in delivering the clay balls, apparently unconsciously "giving away" more than he wanted to. Then he tried to close up —and defecates (just as the little girl above had done when deciding to hold on to the pencils). As for the fact that the patient's eliminative system has become the means of expressing ambivalence, constitutional and historical factors will have to be considered. From the anamnesis one fact suggests itself: John was hard to train and his mother beat him often. When, as we assume, he was a witness to his mother's infidelity, i.e., saw her do "dirty" secret and sexual things herself, it is conceivable that he was overcome by hate against the deceitful *M* out of love for whom he had fought himself in an effort to become clean, asexual, and truthful. However, more important at this moment than any reconstruction is the recognition of the conscious factors which block the access to the *Pt's* confidence.

"*D*"

PSYCHOANALYTIC INTERPRETATION

1. *Symbols.* (*a*) The *balls* (dumped in playful coöperation) correspond in *consistency* and *mode of use* to *faeces* (which he ejects in anxiety and anger). (*b*) The *balls* ("mother nut," "baby nut" on the one side, many "brother nuts" on the other) correspond in their most obvious differentiations, namely *color* and *number* to a traumatic family constellation (mother and baby on the one side, many strangers on the other).

2. *Defensive arrangements:* The two sets of symbols correspond to the two main problems (both eliminative-retentive) of the therapeutic situation: (*a*) to the symptom which is to be removed; namely, the untimely elimination of faeces; (*b*) to the first requirement for its removal, namely, the giving away of the mother's secret, which John has succeeded in keeping isolated from all therapeutic confessions made during previous treatment. That *Ps,* instead of asking embarrassing questions, has brought John a present and plays with him, probably increases the (conscious) feeling in John that to be fair with *Ps* he should verbally deliver the secret and thus make the first step toward a new life in which he would learn to retain his faeces. For various reasons, some of which will be made apparent only by further analysis, the patient first resists the overwhelming need to deliver his secret. His defenses are: (*a*) to use the play support offered by *Ps* for the substitution of the delivery of the secret with a delivery in a game. This defense fails when the patient's conversation unconsciously gives away a hint by delivering the strange nut family. (*b*) Noticing this, he uses his second and usual defense; he closes up, as far as the secret behind the hint is concerned, while the eliminative urge expresses itself at its original zone, the eliminative organs. As this happens the conflict between the eliminative and retentive modes and his masochistic tendency to express aroused emotions in a regressive, autocosmic, and punishment-provoking way get the better of him.

3. At the end of this first contact, *Ps* makes only an intentionally vague statement to *Pt,* for which the latter thanks him with a smile. More cannot be done, since it remains necessary to disclose what may be proven to be fact in these "communications," in this case a too delicate investigation with which to burden a child. If the information proves correct, the mother has to be

urged to give John permission to talk about *all* his experiences, including those involving her. Only then can we decide how "deep" we have to go to locate the possible damage to John's inner defenses.

"E"

CONFIRMATION AND FURTHER SPECULATION

During *Ps's* next conversation with the patient's mother, she confessed that there were certain episodes she had urged John not to tell the doctors about, and had added, "Daddy surely will kill me if he heard about it." She asked for psychological help for herself and released John from the promise of secrecy which had blocked previous therapeutic efforts.

The following rudely clinical excerpts from a previous publication may serve to characterize John's further treatment.

"The first barrier which psychoanalysis was forced to attack was the castration fear, which, after the *circumcision, had suppressed his soiling without sublimating the impulse.* Expecting new physical deprivations, the boy would continue to appear equipped with two pairs of eyeglasses on his nose, three knives on a chain hanging out of his trousers and a half dozen pencils sticking out of his vest pocket. Alternately he was a 'bad guy' or a cross policeman. He would settle down to a quiet play only for a few moments, during which he would choose *little objects* (houses, trees and people) no larger than two or three inches high, and make *covers* for them out of *red plasticine.* But again and again he would become very pale and ask for permission to go to the bathroom.

In describing an automobile accident he had witnessed, in which the chief damage was a *flat tire,* John almost fainted. He felt equally sick when I asked him about certain sleeping arrangements. It appeared that he had seen (in crowded quarters) a man perform intercourse with a woman who sat on him, and he had observed that the man's *penis looked shorter* afterwards. His interpretation of this had been entirely *anal.* Maybe the woman, whose face seemed flushed, had defecated into the man's umbilicus and had done some harm to his genitals. Or the man had, as it were, eliminated a part of his penis into the woman's rectum out of which she later would deliver, i.e., again eliminate, the baby. In addition to the *enlightenment* given that semen and not a part of the penis remained in the woman, the circumcision was talked over and reassurances given for the more important remainder of his genitals.

His first concentrated skilful and sustained play was the following: A caterpillar tractor slowly approached the rear end of a truck, the door of which had been opened. A dog had been placed on the tractor's chain wheels in such a way that he was hurled into the truck at the moment the tractor bumped into it. Obviously he wanted to make sure by *experimenting* with his toys that the pleasant idea of something being thrown into another body without hurting either the giver or the receiver was sensible and workable, although his unresolved anal fixation (no doubt in coöperation with certain common "animalistic" tendencies and observations) did not allow him to conceive of intrusion in any other way than from behind. But it was not as before brown stuff or mud which was thrown, it was *something living* (semen).

Outside the play hours, the eliminative impulse made its reappearance in John's life in macrocosmic fashion. The whole house, the whole body, the whole world was used for the representation of an impulse which did not yet dare to return to its zone of origin. In his sleep, he would start to throw the belongings of other people, and only theirs, out of the window. Then, in the daytime, he threw stones into neighbors' houses and mud against passing cars. Soon he deposited faeces, well wrapped, on the porch of a hated woman neighbor. When these acts were punished, he turned violently against himself. For days he would run away, coming back covered with dirt, oblivious of time and space. He still did not soil, but desperation and the need for elimination became so all powerful that he seemed to *eliminate himself* by wild walks without any goal, coming back so covered with mud that it was clear he must have undressed and rolled in it. Another time he rolled in poison ivy and became covered with the rash.

When he noticed that, by a slowly narrowing network of interpretations, I wanted to put into words those of his impulses which he feared most; namely, elimination and intrusion in their relationship to his mother, he grew pale and resistive. He began a four-day period of faecal *retention,* stopped talking and playing, and stole excessively, hiding the objects. As all patients do, he felt rightly that verbalization means detachment and resignation: He did not dare to do the manifest, but he did not want to give up the latent.

He did not live at home at this time. After many weeks, he received the first letter from his mother. Retiring to his room, he shrank, as it were, physically and mentally, and soiled himself. For a while he did this regularly whenever his mother communicated with him. It was then possible to interpret to him his ambivalent love for his mother, the problems of his bowel training, and his theories concerning his parents' bodies. It was here also that his first free *flow of memories* and associations appeared, allowing us to verbalize much that had been dangerous only because it had been amorphous.

One day he suddenly expressed the wish to make a poem. If there ever was a child who, in his make-up and behavior, did not lead one to expect an aesthetic impulse, it was John. Nevertheless, in a *flood of words,* he now began to dictate song after song about beautiful things. Then he proposed the idea, which he almost shrieked, of sending these poems to his mother. The act of producing and writing these poems, of putting them into envelopes and into the mailbox, fascinated him for weeks. He *gave something to his mother* and it was *beautiful!* The intense emotional interest in this new medium of expression and the general change in habits accompanying it, indicate that by means of this act of sending something beautiful to his mother the eliminative impulse had found a higher level of expression: the zone submitted to training."

D. Orality in a Boy of Four

Dick was brought to our attention by a physician. His mother, the physician's patient, had complained for the last year or so of a "queer trait" in her little boy; encouraged by our work, the physician, an extraordinarily good observer, familiar with the principles of psychoanalysis, decided to try her eye on the child's play. She invited the little boy, who had never seen her, to come to her office to play and reported to us the five contacts, the first three of which will be given here.

Dick on his fourth birthday was a physically healthy, attractive, and intelligent child who had a good appetite and slept well. However, he was often dreamy and withdrawn and, with strange indifference, would express rather queer fears and concepts. His parents, warned by outsiders, began to fear that "some day he might withdraw completely and not come out of it." They had had this in mind for some time when suddenly, at four years and two months of age, he calmly refused to speak for 24 hours and for some days after would only whisper. Such "spells" recurred.

It had started during a big family dinner. An uncle's completely bald head fascinated Dick. Innocently, he remarked, *"You haven't any hair on your head."* The adults smiled in embarrassment and hoped he would think of something else, but a few moments later he addressed the bald-headed man again. *"Have you no comb at your house?"* After more such remarks Dick's grandmother took him aside and told him that he was "not to talk about this any more." The child, without any display of emotion, became silent and remained silent for 24 hours, except for some whispered remarks in school the next morning.

Naturally, the parents were worried about such a radical reaction to an everyday occurrence such as the prohibition against talking about a seemingly unimportant matter. On the other hand, it was hard to judge the "seriousness" of Dick's reaction for he seemed neither stubborn, nor worried, nor angry; he simply was far away, apparently uninterested in a means of communication which had proved so troublesome.

One remembered then that on several occasions Dick had been a radical representative of the biblical saying, *"If thine eye offend thee, pluck it out"* —or rather its infantile form, *"If thine eye offend thy parents, pluck it out."* There had been, for example, a time (it was during one of his mother's pregnancies) when he was very proud of and liked to display and brag about his "nice fat tummy." Its unproductivity devaluated the possession of this part of his body, whereupon he remarked that he was going to throw it out of the window and was found pressing it against a hot radiator "to burn it off." Similarly, after one of his little sisters had been born and had taken supremacy in the family's attention, he seemed ready to cast away all the prerogatives of his age and sex. He began to creep, to use baby talk, and even to want his clothes and his belongings to be called "little." Again, he not only tried to deny a devaluated possession, this time his genitals, but was found attempting "to pull them off," and finally asked his distraught parents to do him this service.

It would be hard to say exactly whether and where all this transgresses the range of variations and episodic peculiarities of normal child behavior. To his intimate observers, Dick seemed to *experiment with reality* in a somewhat less playful and more deeply preoccupied way than most children do. He was interested in parts of the body (the "tummy" of a pregnant woman, the penis) which are of outstanding importance in some cases, but are missing in others without apparent disadvantage for either well-being or prestige. This preoccupation with missing things could take possession of him to such a degree that the majority of his remarks and questions during a given period would indicate a concept of the world in which *missing things* were not the exception but the rule and the dominant aspects. After he had been frightened by the sight of eyeglasses, he asked everyone, including perfect strangers, whether their eyes came out. After he had discovered that a certain old man had false teeth, he asked the same question about everybody's teeth. When he saw a sculptured bust, he remarked that it had "no feet"; on entering a room, he pointed to what looked to him like holes in the ceiling before he noticed anything else. To him, a person did not "have" a tummy or an arm, but "wore" them; an expression which clearly implied the suspicion that these parts could be taken off like clothes.

Thus, at times, his body image seemed to lack a certain integrity. But while his calmness suggested that this lack was simply the remnant of an earlier age, i.e., represented a maturational deficiency, his usual display of intelligence contradicted this interpretation. Consequently, it was necessary to assume that the boy experienced (or pretended to experience) rather something of a disintegration of his body image.

An attempt to test Dick's intelligence had the following result:

> In many instances the child appeared to be concentrating on the task at hand. At other times he seemed almost like a sleepwalker. The very much longer time required for the third trial of the Seguin form board may be attributed to the fact that two or three times he simply became fixated on a block and was unable to continue the activity. When a key was held out to

him and he was asked to name it, he seemed to look right through it; several minutes later it was presented to him again and he quickly and easily gave the name. His successful responses (at the age of 44 months) were, for the most part, at the three-and-one-half and the four-year levels. One certainly has the impression that this is a potentially able child. When brought in during one of his phases of not speaking, "he was very aloof and did not speak a word. He was fascinated by the bridge of blocks built for his own little car and smiled willingly, but would not try one himself; he sat down once or twice, but each time became uneasy and immediately pushed the chair away from him. He looked out of the window a good deal and remained in a teasing mood so that no satisfactory developmental picture could be obtained. He resented all efforts to help him and pushed the examiner's hand away. In general, he looked at everything with a curious combination of attention and dreaminess. He was not eager to leave, but went passively when told to go."

That Dick really had a most emotional interest in the integrity of the objects to whose defects he referred casually became obvious when, during his spells of silence or whispering, he could be observed creating a private world in which he could inquire about missing things and be sure to get a comforting answer. Thus he could be overheard asking himself, *"Has that car a spare tire?"* and answering himself, *"Yes it has, Dick."* This (normal if transient) method of dealing with observable fact he used also in matters of conscience. "Dick, you must not do that.—But I want to do it.—It is better not to do it.—But I am going to do it." Whereupon the "adult" voice seemed to be giving in.

Dick seemed genuinely afraid that certain radiators were going to bite him, and it will be one of the tasks of our play analysis to find out why certain radiators seem to him to be animal-like, others not. This manifest fear that something inanimate might have a hidden mouth to bite him corresponded to the only recurrent dream he liked to report, namely of a certain being to whom he gave a strange name and of which he could only say that it had "no mouth." Incidentally, he spoke about dreams as if they were real. Visiting a friend, he would say, *"I was here last night and played with you."* We know that many children indicate that at least in answer to certain suggestive questions they are unable to differentiate verbally between dream and reality. What interests us about this child is that he preferred to talk about such borderline experiences, often to the exclusion of all other topics. Cars often seemed to be animate beings for him. "It is too bad that motorcars have to sleep out in the street." For some time he has been differentiating also between men-cars and lady-cars, basing the distinction partly on types of cars which were driven by men or women of his acquaintance. This differentiation, however, overlapped with the one applied to all objects and based on their "yes" and "no" aspects, namely, whether they have a hole (a sink for him is a "no thing") or outstanding parts (a comb is a manifold "yes thing").

All-or-nothing people, who seem ready literally to pluck out the eye which offends them, are hard to deal with. When asked to *keep* it they may insist with equal radicalness on using it. Thus when Dick's parents noticed that to the detriment of his development he had decided to become in all physical and mental respects the likeness of his sister, they initiated a campaign for masculinity, insisting that to have a penis was practical and desirable and nothing to be ashamed of. He took them at their word. He exhibited his penis and, this prohibited, began to shout around his word for penis in a voice the masculinity of which left nothing to be desired; he began to lift the skirts of little girls and finally annoyed adult women visitors by looking at them from the frog's eye-view. The fact that the shouting of the word for penis occurred and was prohibited shortly before he met and annoyed the man who had no hair explains some of the intensity of his reaction to the grandmother's prohibition. For him, *to have a thing, to show it, and to use the word for it* meant three inseparable aspects of its possession. It was obviously intolerable to him that after he had tried in vain to be everything people seemed to like better than a little boy (namely, a pregnant mother, a little girl, etc.) he should meet even more powerful interferences when acting on the suggestion that he become a boy. Not only did he, as we have heard, begin to whisper, but he also wrapped his head in a sheet at night, tried to force his head into a toilet, etc. Biting became the dominant idea in his play; he threatened to bite not only his sister, but also himself, and actually was observed biting a dog's tail.

From such scant material, which gives the mother's complaints (somewhat ordered by us according to areas of expression rather than chronologically), we derive the following preliminary outline of Dick's personality: He is overcome by his drives at one moment, by prohibiting forces at the next; each time, however, an all-or-none attitude takes possession of him; similarly he changes his rôles of identification easily, although each time radically and completely. Thus in his subjective as well as his objective world he keeps rôles changeable, and parts detachable, introjects easily and projects easily. What danger he may be trying to ward off (if what we describe are defensive mechanisms, and not merely regression and disintegration) is only hinted at in the content of his phobia: *He is threatened by a being with a mouth, which in his dreams* (according to the undistorted wish-fulfilling character of children's dreams) *appears without a mouth.* Mouth and throat become the "zonal" emphasis in a world of dangerous have-nots (have holes) and detachable parts: he has spoken of biting ever since his last experiment in masculinity—at the height of the phallic phase—failed.

We cannot publish a detailed chronological life history of this child. Whatever historical data come to our mind as we observe the child's play will be reported in that context. We must concentrate on tracing the outline in playful and fearful acts of a doubting and often despairing infantile mind which has been unable so far to settle down to a clear differentiation of certain borderlines of individual and social existence. We shall see him concerned with *the differentiation between male and female, between ego and object, between animate and inanimate, between bodily coherence and fluctuating environment,* etc. As psychoanalytic experience and theory would lead us to expect such basic uncertainty will prove to be linked with an *oral complex,* i.e., the fixation on an easy regression to the wishes and fears of one of the incorporative stages. Beyond showing how this reveals itself in the child's play, we will avoid drawing diagnostic or prognostic conclusions from childhood material we are just learning to approach.

Whether the fault lies with the circumstances under which this material was won, or its inner affinity to the early stages of personality development, it is hard to present and doubtless even more difficult to read. The patient reader, it is hoped, will reach some point which can serve him as a bridge from his adult thinking to that of a disturbed infantile mind—and to that of stubborn observers who cannot bring themselves to dismiss "queer" material as meaningless.

The circumstances of observation and the nature of the material make the following methodological changes necessary:

1. An account of the sequence of the child's acts will not be attempted. Instead, an inventory of behavior items (according to the classifications: toys, "life-sized" objects, people) will be given for each contact. Only occasionally will a reference be made which places an act nearer to the beginning or the end of a contact.
2. Except where a coherent plot becomes discernible there will be no attempt to account regularly for the ideational content in the patient's fleeting play.
3. In order to familiarize the reader with the character of this patient's play the inventory of the first three hours is given in toto before the single items are taken up for analysis.

1. *Inventory of First Three Contacts*

a. First contact. Dick, who has never seen the physician before, seems from the very start to accept her in a matter-of-fact way. Pressing into her room, he only asks in a casual way, *"Are your eyes all right?"* and then eagerly, *"Where are the toys?"*—He immediately piles all the toys (except for a large truck with doors) into one box and carries them to the couch.—His mother, who comes after him to ask if it will be all right for her to go away, has to repeat her question before he gives a casual, rather impatient *"Yes."* She says goodbye, but he pays no further attention to her.

(1) *Toys.* Dick takes or points to a number of toys, and with one exception merely makes remarks about them instead of playing with them. He looks from all possible angles at the toy cars, his head close to them, and repeatedly makes the following remarks. "They have no spare tires." "Are they broken off?" "Did they ever have them?" "They are not meant to have spare tires, are they?" "It's all right, they don't need them." "Don't you touch them." "I don't like those cars." "I don't want to play with them."

He treats the red wrecker with a satisfied smile. "This car has two spare tires." "I like this one." He associates to it: "Mother's car has a spare tire."

"There is no water in the toilet." "We will leave the cover up." "We had better put it down again." "I don't have to go to the toilet." "Don't put any water in it."

Dick has left only one toy in the toy closet, a big red truck with doors. Near the end of the hour he says, *"I can't have it, can I?"* The physician says he can play with any of the toys. *"No,"* he says, and closes the closet door. Later he takes the truck out, opens its back doors, shuts them, and puts the truck back, saying, *"You mustn't touch it."*

He builds a garage for two cars; puts doors on it and two roofs; is pleased with it. After a little, he opens the doors with the intention of putting in two cars, then knocks the whole structure down, saying, *"I don't need it."*

(2) *Big objects.* Dick says, *"Does the chair come off?"* The physician thinks he means the swivel top and replies, *"No."* Dick says, *"Yes it does,"* and demonstrates by lifting the chair. "The table comes off too. You were kidding me when you said it didn't, weren't you?" (He lifts the table.)

He looks at the radiator in an intently exploratory way, eyeing the two ends with some anxiety, and says, *"There is no water coming out, is there? How does it work?"* The physician offers to turn on the steam. He seems alarmed and cries, *"Don't do it!"* The physician says, *"Tell me what you want to know about radiators."* Dick presses against the physician's knees and says in a confidential manner, *"I want to know about yellow radiators."*

Near the end of the hour Dick says to the physician, *"You mustn't take your dress off. I will spank you if you do."*

b. Second (short) contact. Dick again presses eagerly into the room the minute the door is opened and goes instantly to the toys. His acts and words are almost identical with those of the first contact with the difference that he handles the cars with more freedom and only once or twice comments on the lack of spare tires.

About the girl doll he says: *"She has no pants on. She has to go to the toilet. You make her sit on the toilet. She is all through."* He puts her in front of the basin to wash her hands, then puts her in the bath tub. (Her dress is sewed on.) "She is a naughty girl to be in the tub in her dress. She mustn't take her dress off."

c. Third contact.

(1) *Toys.* About the cars Dick says over and over: *"Do they have spare tires? Are they broken off?"* He points to little knobs and calls them spare tires.—He says, *"Have all wreckers two spare tires? I want to break them off."*

He sets the bathroom set up several times, each time hesitating to play with it. His eyes wander to the dolls, but he turns away again. Finally, near the end of the hour, he announces: *"The little girl needs a bath; she is sick."* He asks the physician to let the water run into the tub; he seems pleased and excited.

He opens the truck doors and says, *"I'd better shut them."* He opens them again and puts half a dozen toys in. He removes them again.

Dick again builds a garage with closed doors and runs a small car against the door as if it wanted to enter. The physician remarks, *"The car can't go through the closed door, can it?"* Dick opens the door, runs a car in and out and in again, leaves it for a while, then takes it out again and abandons the garage with the doors open.

(2) *Big objects.* About the carvings on the arms of the chair Dick says: *"They aren't feet, are they? They won't come off, will they?—They look like your hands."*

"I am afraid it will bite me." The physician asks, *"Who?"* Dick replies, with glee, *"The radiator downstairs."*

(3) *Physician.* Pressing against the physician's knees, he points to big gold buttons (resembling large raspberries) on her dress and says several times: *"I want to bite them."* The physician asks, *"Do you like to bite things?"* He replies, *"Yes, I like to bite sister. I am going to bite sister when I go home today."*—Shortly afterwards he says, *"I want to eat my dinner. Have you any crackers?"* Then he asks: *"People can't go down people's lanes, can they?"* The physician says, *"You mean the red lane?"* He replies, *"The yellow lane. Sister calls it a red lane. I call it a yellow lane.—Yellow is my favorite color."*

2. *First Contact: Analysis*

"A"

I

PHYSICIAN

Dick, who has never seen the Physician before, seems from the very start to accept her in a matter-of-fact way. Pressing into her room, he only asks in a casual way, *"Are your eyes all right?"* and then eagerly, *"Where are the toys?"*

II

Toys

He immediately piles all the toys (except for a large truck with doors) into one box and carries them to the couch.

III

Mother

His mother, who comes after him to ask if it will be all right for her to go away, has to repeat her question before he gives a casual, rather impatient *"Yes."* She says goodbye, but he pays no further attention to her.

"B"

I, II, III

No hesitance on seeing stranger (doctor) is manifested. His mother's departure is even urged with slight impatience. His interest in the physician is fleeting and temporary. All his eagerness is directed toward *having all the toys at once.*

In the macrosphere we thus see an exclusion of the mother, a passing by the doctor, an eager intrusion into the strange room; in the microsphere, an eager collection of all the toys (with the exclusion of one large truck) in one place.

The sentence, *"Are your eyes all right?"* is *D*'s individual way of saying, *"How do you do."*

"C"

I, II, III

The impatience with which Dick leaves his *M* behind is in striking contrast to the usual mother adherence displayed by children brought for observation. One is immediately reminded of his reported tendency to pronouncedly deny his interest in persons, objects, or parts of himself to which he had clung the moment before.

His first likewise pronouncedly "casual" interest in *Ps* then, concerns a part of her body which to his mind (how seriously we don't know) could "come off." This remark recalls an episode: A barber not long ago happened to inflict a slight cut on Dick's ear, whereupon the boy would go to barbers only on the condition that they *did not wear eyeglasses,* as if to imply that persons who have detachable parts are more apt to mutilate others. It may be in keeping with such an idea that he feels safer with a doctor if her eyes are "all right." However, all this seems, for the moment, overshadowed by his eagerness to see the toys.

"A"

IV–VIII

Toys

Dick takes or points to a number of toys, and with one exception merely makes remarks about them instead of playing with them.

He looks from all possible angles at the toy CARS, his head close to them, and repeatedly makes the following remarks: *"They have no spare tires."* "Are they broken off?" "Did they ever have them?" "They are not meant to have spare tires, are they?" "It's all right, they don't need them." *"Don't you touch them."*

"I don't like those cars." *"I don't want to play with them."*

He treats the red WRECKER with a satisfied smile. *"This car has two spare tires." "I like this one."*

He associates to it: "Mother's car has a spare tire."

"There is no water in the toilet." "We will leave the cover up." "We had better put it down again." "I don't have to go to the toilet."

"Don't put any water in it."

(Dick has left only one toy in the toy closet, a big red TRUCK with doors.) Near the end of the hour: *"I can't have it,* can I?" (The physician says he may play with any of the toys.) "No." Closes the closet door.

Later he takes the truck out, opens its back doors, shuts them, and puts the truck back. *"You mustn't touch it."*

He BUILDS A GARAGE for two cars; puts doors on it and two roofs; is pleased with it. After a little, he opens the doors with the intention of putting in two cars, then knocks the whole structure down, saying, *"I don't need it."*

"B"

IV–VIII

Dick reveals his interest and withdrawal in the following scale of approaches and avoidances.

Having *piled up* all the toys most eagerly, he does not play with them. He shifts his interest from one to the other, only to *discard* most toys with one or more remarks of a negative character.

He is positive about (*"likes"*) only the red wrecker (which has two spare tires where other cars have none) and *associates* to it his mother's car (the only reference to an object outside of the playroom).

He *manipulates* but does not play with the truck with two doors (which had been the only toy left behind in the closet).

He really *plays* only for a moment at building a two-door garage which, however, he *destroys* immediately.

At the same time he establishes a verbal adherence to the physician. In addition to referring to missing parts, he protests his disinclination to play with the toys and insists that such play is prohibited, either assumedly by the physician or expressly by himself.

"C"

IV–VIII

Dick's curve of interest and withdrawal recalls the strength of his initial attachment (eager incorporation) to persons and objects, and his seemingly unemotional dismissal and easy change of them.

As he wants to have all the toys but does not take the time to play with them, he insists on continuously talking with the physician without listening to her answers. His one-sided pursuit of a problem becomes most obvious where he dismisses as irrelevant permissions given by *Ps* and goes on establishing prohibitions. Thus, in spite of his confidential adherence and urgent inquisitiveness, Dick seems to be quite out of touch with the physician, while for the latter, it is not only hard to know what he means but also how seriously he is interested in what he means. Referring at random to the objects at hand, he is obviously speaking of some situation other than the one he presently shares with the physician.

A first hint as to what he may refer to is given in his questions in regard to parts coming off objects and to prohibited acts. These two classes of ideas in almost identical formulations are represented in the questions he asked his mother in rapid succession when she tried to assure him that his penis once and for all belonged to him: "Does sister have a penis?" *"Did she lose it?"* "Will she have one later?" *"Did she do anything naughty to it?"*

His assurances that the cars "aren't meant to have spare tires," that "they are all right," and "don't need them," correspond, then, to the answers the mother reports having given the boy: "Girls are meant to be the way they are," etc.

His whole attitude makes it probable that whatever he wants to discuss here is related to a conversation he had with an adult. That "the cars are all right" as well as the prohibitions "not to touch them" are brought forward in the way of a now reassuring, now admonishing adult. As we saw, he not only discards *Ps's* permission to play with (her) truck, but at the same time treats her as if she were not of age.

Thus, first eagerly interested in the toys, he gradually and individually denies his interest in any of them (except the wrecker with the double spare tires) and instead assumes the rôle of the adult who knows well that the play is forbidden, while the physician becomes a naughty girl with bad intentions. Are these intentions projected, i.e., do they represent his original play intentions? In any event, in creating this arrangement with an adult Dick goes one step further than he did in the monologues (overheard by *M*) in which he was two people all in one, the prohibiting adult and the stubborn child. He now assigns the infantile rôle totally to the physician while he becomes the prohibiting adult.

"D"

IV–VIII

The tentative nature of the first references to symbolic equations has been emphasized above. We are therefore stating them boldly here, going out from what seems to us the key to the patient's system of symbols.

Symbols. If small cars without spare tires are associated with *small human bodies with missing parts* (girls, sisters), a truck and a garage are larger bodies and potential *receptacles for smaller bodies* (women, mothers).

Arrangement. Dick, afraid to play because of the meaning the toys have for him, denies his interest in them; he takes unto himself the attitude of the selecting, prohibiting, and reassuring adult and assumes (projects?) naughty intentions in the physician.

"A"

IX, X, XI

Life-sized objects: Chair, Table, Radiator. "Does it *come off?* (CHAIR) (Physician thinks he means the swivel top and says, *"No."*) "Yes it does." He demonstrates by lifting the chair.

"The table comes off too. You were *kidding* me when you said it didn't, weren't you?" (He lifts the table.)

Looks at RADIATOR in an intently exploratory way, eyeing the two ends with some anxiety: "There is no *water coming out* is there? How does it work?" (Physician offers to turn on the steam.) He seems alarmed, *"Don't* do it!"

(Physician: "Tell me what you want to know about radiators?") Dick presses against physician's knees and says in a confidential manner, "I want to know about *yellow radiators."*

"B"

IX, X, XI

On the whole, as we saw, avoiding microcosmic play, Dick gives a more courageous interest to some life-sized objects. He does not discard them as he did the smaller objects, but elatedly proves by lifting them that two of these objects (chair, table) "come off." However, when shifting his interest to the radiator, he withdraws: "Don't do it."

Thus his general attempt at showing himself the courageous master of the macrosphere (i.e., of life-sized objects and of the physician) he fails when confronted with the radiator *which has apertures and a watery, noisy inside.* When speaking of this, Dick develops a more intimate bodily adherence to the physician than he does during the rest of the contact.

Verbally, he *"kids"* her in the macrosphere as in the microsphere he had disciplined and reassured her.

"C"

IX, X, XI

In IV–VIII we understood Dick's first reference to the small toys to mean that parts are missing, have "come off." He now demonstrates to the physician that life-sized objects "come off" in toto. These objects have *four legs,* one similarity with animals. The radiator's similarity with animals rests on the fact that he has a (*warm, noisy, water-filled*) *inside and apertures for intake and release.* Dick dares to touch chair and table, but not the radiator.

This brings to mind the explanation Dick's mother had for his radiator phobia. It appeared, she reported, after a *nurse had kidded* Dick to the effect that *a certain radiator* (it was yellow and had four legs) would jump at him and *bite him.* Probably she used this as a threat in connection with some misdemeanor on his part.

It seems possible, therefore, that Dick in his first contact is introducing us to two aspects of one and the same problem, (*a*) can small objects (children) lose parts "which they need," (*b*) have big objects (animals? adults?) the intention of suddenly jumping at you (and biting)? These questions appear in a conversational context which betrays deep mistrust in and the anxious wish to experiment with adults' prohibitions, assurances, and jokes: His dealing with small objects seemed to lead back to a *reassuring conversation with his mother,* his dealing with big objects to refer to the *nurse's threat.*

"D"

IX, X, XI

1. *Symbols.* Chair, table, radiator; fourleggedness, occasional fourleggedness, apertures, warm touch, inner noise: Bodies which move and bite.

2. Years ago a nurse had said a radiator would bite him. *"She is only kidding,"* his mother had reassured him. This episode is represented with *displacement* (chair, table, which *do* come off, instead of radiator), reversal from passive into active (the physician is kidded and is shown that certain objects *do* come off), and *denial* (of his fear). The arrangement fails in the case of a radiator, the original object of his phobia. We see: Dick *believed in the nurse's threat more than in his mother's reassurances.*

"A"

XII

PHYSICIAN

Near the end of the hour, to physician: *"You mustn't take your dress off. I will spank you if you do."*

"B"

XII

After the short bodily adherence, Dick's interest in physician again appears fleeting, surprising, teasing. She is small and inclined to uncover herself; he is big, and assumes the punishing tone of an adult.

"C"

XII

During the first contact Dick's verbalized interest in the physician's body has proceeded from an organ extension (eyeglasses) which we assume to stand for the part they cover (eyes) to the clothes which may be taken off, revealing the *whole body*. This reflects two of the three foci of interest in inanimate objects, namely, the *partial* focus, "coming-off" parts of small objects; and the *total* one: the "coming off" of big objects.

A third focus, namely, the "insides" of larger objects which could enclose the smaller ones, has not appeared in relation to the physician's body. But we have noticed that all the extreme moments of the contact referred to receptacles. It was the big truck that was *completely ignored* at the beginning of the contact when Dick was so eager to get all the toys (—and to ignore mother and physician). His *only play* concerned the two-door garage which he destroyed, and *open anxiety* was obvious only when the working inside of the radiator was referred to.—(Has his fear of certain radiators originally been the fear of women's bodies? If yes, why?)

"D"

XII

Symbols. As there is a symbolic equation between toy cars and children, there is one between life-sized objects with four legs and animals or adults. The danger threatening the small beings is that something may "come off" them; the danger going out from big beings is that they may move and (at least so says his radiator phobia) bite.

Arrangement. The warning given the innocent physician not to take her dress off, again uses the projective-introjective arrangement which typified the whole hour. *He speaks as if she were intending to do the "naughty" thing he has in mind.* This is as far as the transference has developed during the first contact.

"E"

XII

If we review Dick's behavior with objects so far, we find three themes represented: (1) it is not permissible to touch small cars (children) with missing parts (genitals); (2) it is not permissible to touch big cars and other receptacles (women) which can harbor small cars (children); (3) it is dangerous to touch large inanimate objects (animals, women?) that have apertures and an inside. In order to see the dangerous ideas behind the avoided objects and acts we may connect tentatively: 1 and 2: a girl is being born from within a mother; 1 and 3: missing parts on small bodies have been bitten off by a dangerous big object; 2 and 3: inanimate and animate receptacles are female; both have insides and dangerous apertures.

3. *Second (Very Short) Contact: Analysis*

"A"

I

REPETITIONS

Dick again presses eagerly into the room the minute the door is opened and goes instantly to the toys. His acts and words are almost identical with those of the first contact with the difference that he handles the cars with more freedom and only once or twice comments on the lack of spare tires.

II

GIRL DOLL AND BATHROOM

"She has no pants on. She has to go to the toilet. You make her sit on the toilet. She is all through."

Puts her in front of the basin to wash her hands; then puts her in the bath tub. (Her dress is sewed on.) "She is a naughty girl to be in the tub in her dress. She mustn't take her dress off."

"B"

This is the longest interest Dick has attached to any one toy so far. Ideational content: Dirty, *naughty,* exhibitionistic girl is taken care of and reproved. Microcosmically the girl is *put into a receptacle* (an act symbolically avoided the day before). This is done in coöperation with the physician.

"C"

Like Mary in her second hour, Dick is somewhat changed. The physician's impression is that he seems to accept in their existing form the cars without spare tires, an impression that goes well with his maternal play with the girl doll. He is motherly today, perhaps an identification with the physician who the day before disproved his fearful expectations and proved not to be a doctor but a maternal friend.

On the other hand, the girl dolly seems to be pretty naughty—whether she does or does not take off her dress. She has inherited the naughtiness which during the first contact appeared partly in denials and was partly projected on the physician.

"D"

Arrangement. Dick and physician are united in the maternal care for a naughty child. According to our expectations (which Mary did not disappoint) this more concentrated microcosmic interlude should free some expansive energy for a clearer macrocosmic representation of Dick's wishes.

4. *Third Contact: Analysis*

"A"

I

Toys

Over and over: "Do they (CARS) have spare tires? Are they broken off?" Points to *little knobs* and *calls them spare tires.*

"Have all WRECKERS two spare tires? I *want to break them off.*"

Sets BATHROOM SET up several times, each time hesitating to play with it. His eyes wander to the dolls, but he turns away again. Finally, near the end of the hour, he announces: "The little girl needs a bath, she is sick." Asks *Ps* to *let water run into the tub,* seems pleased and excited.

Opens TRUCK doors. "I'd better shut them." Opens them again and *puts* half a dozen *toys in.* Removes them again.

Dick again builds a GARAGE with closed doors and runs a small car against the door as if it wanted to enter. (Physician remarks, *"The car can't go through the closed door, can it?"*) Dick opens the door, runs a *car in and out and in again,* leaves it for a while, then takes it out again and abandons the garage with doors open.

"B"

I

Dick's interest, though still fleeting and finally always discarded, remains with each item for one *positive* or *aggressive* statement or move *beyond the first contact's* self-imposed limits. The little have-not cars still have knobs that suggest the possibility there may have been or there some day may be more; while the proud wrecker tempts him to break off his double parts.—Toys are put into the truck, cars without spare tires into a garage, and a (sick) girl into the bathtub. Verbally there is an increase in positive statement.

"C"

I

Before he again disposes of the toys in his usual fleeting, listless way, Dick adds something positive or aggressive to his repetitions, as the following comparison shows:

	First Contact	*Third Contact*
Cars	"They have no spare tires."	"Little knobs are spare tires."
Wrecker	"He has two spare tires."	"I want to break them off."
Truck	"I must shut it."	Puts toys in.
Bathroom	"Don't put any water in it."	"Let water run into the tub."
Garage	Destroys structure before putting cars in.	Runs a car in. (Does not destroy the garage.)

The evaluation of the car knobs, in the generally more hopeful atmosphere of this hour and if viewed in the context of the other symbolical treatment of toy cars, corresponds to a typical self-comforting infantile reaction to the observation of sexual differences: Little boys and girls often expect a penis to be growing inside the girl (the clitoris providing the girl with a tangible hope) while little boys expect all nipples to become breasts. Both vain hopes contain, as is so often the case, some biological truth. The hopeful reference to these knobs is, then, a belated symbolical expression of that one idea in the conversation with his mother which had not been taken care of in the first contact, namely, the question: "Will she (sister) have a penis later?"

It is interesting that this item, in the context of a general slight expansion of *Spielraum* in this hour occurs in connection with a temptation to devaluate the overcompensatory red car by making him lose what was his distinction. Dick's inclination to sacrifice his proudest possessions (tummy, penis) in order to avoid friction, and to atone for his aggressiveness against his sister must come to mind. (We remember he had tried to pull off his penis at the end of a supermasculine period when he had been told he was "hurting the girls' feelings.") This suggests a defense mechanism of equalization.

"A"

II

Chair, Radiator

About carvings on CHAIR'S arms: "They aren't feet, are they? They won't come off, will they?—They *look like your hands.*"

"I am *afraid it will bite me.*" ("Who?") With glee: "The RADIATOR downstairs."

"B"

II

In the macrosphere (as in the microsphere) Dick's increasingly gleeful interest remains long enough with the subject to reveal further dangerous associations. (*a*) The association between a potentially detachable part of one of the life-sized objects (the chair's "hands") and a part of the physician's body is frankly pointed out; (*b*) the expectation of being bitten by a radiator is mentioned for the first time "with glee."

"C"

II

During the first hour it was already obvious that there was a correspondence between the spontaneous remarks made about the life-sized objects and those addressed to the physician, the idea of the big organism with dangerous intentions being the connecting association. It is in keeping with the aggressive expansion in the microsphere that in the macrosphere a connection is created between an inanimate, life-sized object and the physician's body. The first contact gave reason to suspect that the transference was developing along this line. (Remember Dick's first question: were the physician's eyes all right—which meant—or did they come off?)

The exalted feeling of "living dangerously" which accompanies today's adventurous expansion (in the microsphere it was represented by the idea of his wrecking the red wrecker) is climaxed in the queer pleasurable anticipation of the very event which is the center of his phobia, namely, to be bitten by the radiator. It is this glee in Dick which was always one of the most difficult traits to understand. There is little obvious "masochism" in it; rather a playful question in view of the dangers of bi-sexuality: how would it be if the sexes could be interchanged—what would one lose, what win?

"A"

III

PHYSICIAN

Pressing against the physician's knees, he points to big, *gold buttons* (resembling large raspberries) on her dress and says several times: *"I want to bite them."* ("Do you like to bite things?") "Yes, I like to bite sister. I am going to bite sister when I go home today."

Shortly afterwards: "I want to eat my dinner. Have you any crackers?"

Shortly afterwards: *"People can't go down people's lanes,* can they?" ("You mean the red lane?") "The *yellow lane.* Sister calls it a red lane. I call it a yellow lane.—Yellow is my favorite color."

"B"

III

This is the longest and most serious concentration on the physician's person reported so far. With verbal frankness two themes are clearly revealed: a biting wish toward her "buttons" and a consideration of the question of whether one person can be swallowed by another. Spatially, then, both the themes which were first dramatized with inanimate objects have found their way to the human organism: parts of a whole being bitten by a whole; a whole being swallowed by a whole. Verbally the statements are clear and frank; he gives a direct answer to question, while he associates one of the home problems, his playful wish to bite his sister.

"C"

III

The expansion in positive statements makes him reveal a wish toward the physician's dress: to bite her buttons. If we confront this statement (as we did the preceding ones) with the corresponding remark during the first hour, we find opposed: First hour "Don't take your dress off"—This hour: "I want to bite the buttons." The impression is that this expresses an oral interest in the physician's breast (see *E*) although the surprising clearness of the statement can be expected either to hide an as yet undiscernible factor or to lead to bad consequences, such as a belated disruption.

At home Dick has voiced for weeks a wish to "bite his sister's tummy." If we remember that he talked first of his "nice fat tummy" when his mother was pregnant (and that his tummy became devaluated after an unproductive hospitalization for a tonsillectomy) we realize that tummy once meant the bulging aspects of femininity and probably included the breasts as the outside of that big inside out of which the babies come, the very idea which we felt he symbolically approached and avoided from the start.

"D"

III

1. *Symbols:* Little knobs on cars—potential (detachable) organs (penis, nipples) on girl's body.

Buttons on physician's dress—nipples on woman's body (which one wishes to bite).

Yellow lane in yellow radiators = red lane in bodies = nutritional canal

Life-sized, four-legged objects—female organisms (by whom one expects to be bitten or swallowed).

Arrangement: After having microcosmically arranged during the second contact for the little girl to be the naughty child and for the physician and himself to be identified in standards and function in regard to such children, Dick dares to rearrange the whole inventory outlined during the first contact. (*a*) He establishes equality of equipment among the sexes: the knobs of the have-nots will become sizable parts, the spare tires of the have-too-muches can be broken off. (*b*) The cars are put into the truck, the sick girl into the bath; of this the system of symbolic equation used so far admits only one interpretation: the small sister is put back into the mother. (*c*) People can not be swallowed by others; he is not afraid of the radiator (the nurse was only fooling).

(Are these conditions under which he can express [in transference] his biting impulses toward his mother's body?)

"E"

III

1. On the afternoon of the day of this contact, Dick's nursery school teacher makes an observation which indicates that the interest in the female breast actually is uppermost in the patient's mind on this day and is on the surface of his consciousness, although already subject to the defense mechanism (introjection of prohibition) which we saw especially active during the first contact: Dick asked the teacher whether the buttons on her dress could be unbuttoned. Then he pulled her dress apart without unbuttoning it; he "seemed eager and tense." When the dress opened a little, he suddenly withdrew and said, *"No, I can't look in."*

2. The dominating conception in all this play seems to be: there are haves and have-nots in the biological world (yes-things and no-things) and these two groups, in various forms of intercourse, make use of their various extensions and inlets. This mutual use seems to imply a danger to the inviolability of the body as a whole. The mouth can suck and bite the breast, the penis force itself into the body, the baby swell the "tummy" and forces its way out of it. These possibilities appear doubly dangerous if one is ignorant or incredulous of the inner or outer laws which are said to inhibit adult bodies from destroying one another and, on the other hand, possessed by impulses—in this case an overwhelming compulsion to think and talk of biting and an equally overwhelming fear of being bitten and robbed.

3. One could have made an interpretational statement to the child at this point, indicating that behind his kidding terrifying ideas were hidden; that these secret ideas had given a traumatic reality to the nurse's "kidding"; that

it would be worth while talking over what he meant by biting and what the nurse had meant, etc.

5. *Fourth and Fifth Contact*

After the third contact, in which he had just revealed to the physician certain wishes and fears concerning the *biting* and *swallowing* of one human being by another, Dick contracted *croup*. If not genetically meaningful, this event must have secondarily assumed an unfortunate meaning, namely *oral* (throat) *punishment* for him. When, ten days later, he arrived for his fourth contact, we find him *whispering,* shrinking from self-expression, and armed against temptations as well as punishment. It takes only one more contact, however, to bring him back on the road toward further oral revelations. In order to let his extreme form of shrinking, self-limitation, and encasement stand out against another unfolding of his biting fantasies (which are now familiar to us) we shall briefly contrast, without detailed analysis, the most interesting corresponding items of the two contacts.

6. *Fourth Contact: Analysis*

"A"

Dick is not as eager as usual to enter the room. He has not taken his heavy snow suit off, seems extremely pale and apathetic and *speaks only in whispers.*

The physician suggests that he take off his snow suit and offers her help. He refuses, whispering, "I will keep them on anyhow. *I can sit out here until I take them off."* From time to time he smiles at the physician, but stops as soon as she smiles back.

After a while he enters the room with all his clothes on. When asked whether he is hot, he whispers, *"I don't want to take them off;* just my sweater." Takes cap off so that sweater can be taken off; *puts cap on again* and keeps it on; he is plainly hot and uncomfortable for the duration of the contact. For the most part he wanders around, or moves back and forth on knees.

At one point he suddenly becomes more active; puts all square BLOCKS IN A ROW, end to end, and producing aphonic noises shoves the line of blocks along the floor by pushing the rear blocks.

Then he builds a GARAGE, runs the little red wrecker into it, and shoves the line of blocks so that they *block the garage* and, lying on his stomach and whispering, gazes into it.

Looks under GIRL DOLL'S skirts and examines her sleeves. Puts her in the bath tub, then on the floor. Puts BOY DOLL beside her. Puts *boy in tub.* Puts a *block in front of the tub.*

Lying on back, examines TRUCK intently. Suddenly in a *loud, clear voice: "That isn't a truck!"* He points to a little wheel that hangs down from the underside of the truck. (Physician asks, "What is it then?") *Whispering* again: *"It isn't anything."*

"B"

His interest is first concentrated on *himself* and on keeping himself enveloped in clothes and excluded from the physician's room. Then in sudden moves, while still keeping himself in a fortress of clothes, he is playing for moments with more concentration and more independence than ever before. He does not destroy or discard, but (whispering) watches his play arrangements. Autocosmically enveloped and without voice, he puts the *wrecker* in the garage and the *boy* into the tub and *blocks* both with blocks.

Verbal. Whispering and aphonic noises. The statement, "I can sit out here until I take them off" contains a *self verdict* in complete identification with an illusory adult judge. The only loud statement contains a *complete negation:* A truck with a spare wheel isn't a truck—it isn't anything.

"C"

The interrogation and bodily adherence to the physician is broken in this hour. Withdrawn into himself and enveloped in his clothes, he is able to concentrate on longer independent microcosmic play than before. The play is, in a certain sense, *narcissistic* in that he represents in the microsphere what happens in the autosphere: the objects of interest (himself, wrecker, boy-doll) are encased.

(Is he afraid the physician will examine his throat? The past has not given him any reason to expect this, nor has he himself ever treated the observer as a "doctor.")

"D"

Autosphere	*Macrosphere*	*Microsphere*
1. Head covered with cap. Body enveloped in clothes. Voice covered by whispering.	Detained in waiting room.	Beloved red wrecker and boy doll in receptacles with exit blocked.

The boy is unborn, (not the girl).

2. *Arrangement.* Dick today is completely identified with the voice of conscience. In the first hour he had projected all guilt content onto *Ps,* in the second hour onto the girl doll. In the third hour he had admitted aggressive wishes while already offering atonement. He now arrives at a deadlock of complete self-restriction and revengeful stubbornness: If I am not going to take my clothes off, I cannot enter the room and play. Therefore, I am not going to take them off. Dick's mother reports that she had blamed his carelessness in running around with too few clothes for his croup. The self-encasement of this contact, therefore, seems overdetermined, a queer mixture of self annihilation (punishment for last hour's references to the physician's body and implicitly his mother's body), security in self-restriction (he cannot do any harm) and stubborn, vengeful over-obedience (I am not supposed to have few clothes on,—I shall have too many on). That the overdetermination is necessary to produce the performance, is obvious from the fact that this extreme behavior does not occur at home (where his sickness spoke for him) but at the physician's office. It allows us to see some of the components of those "whispering" episodes because of which Dick was brought for treatment: the pious overdoing of a prohibition both as a defense against temptation and a veiled vengeful satisfaction. The whole mischievous energy pent up in such

dramatized self-restriction becomes obvious in the following "criminal" features of the fifth contact.

7. *Fifth Contact*

"A"

Enters room, *lively, talkative,* with hand (through clothes) on genital. *"The floor doesn't come off, does it?"*

"You (PHYSICIAN) *haven't any penis."* ("That's right.") "Ladies haven't." *"Sister hasn't any penis."*

"I'll show you mine." *Exhibits himself.*

"You undress the GIRL (DOLL). You bite her tummy, her hand, her arm, her head, her feet, her behind."

(Pointing to FATHER DOLL): "I am going to take his hat off!"

"B"

The relationship between the microcosmic behavior of the day before and this contact's macrocosmic behavior is clearly one of complete reversal. Whether or not his self-encasement was a relieving atonement for the weakness of the flesh or—as an infantile Nirvana—a triumph of that weakness, today he manically challenges the dangers which he fears most deeply. His questioning and teasing in regard to things which "come off" or part of which "come off" assume a truly macrocosmic form: at least the floor on which we stand won't come off! Consequently the autocosmic fears only symbolically expressed in the previous contacts are now clearly referred to and disproved: I can touch and show my penis! Such safety assured, he not only does not shy away from the idea that girls have been robbed and are bitten by women—he enjoys the idea.

It is interesting that it is in the context of such a disproval of autocosmic dangers that he pays attention, for the first time, to the father doll: he threatens to take off his hat (in dreams, according to Freud, a penis-symbol). Of further interest is the contemporaneousness of self-encasement and voicelessness in the fourth contact, and that of emancipation of voice and exhibitionism in the fifth. We remember that his first whispering spells occurred on the occasion of his being forbidden to talk about a man's hairlessness; this happened shortly after he had been denied the right at the height of his phallic period to show his penis, to shout his word for penis, and to look underneath the girls' skirts because "it hurt the girls' feelings." The voice which exhibited, as it were, the penis in word-magic and hurt the feelings of female beings had a phallic connotation in more than one sense: The shouting, it seems, had not only *exhibitionistically conveyed the content penis,* but also as a *functional expression dramatized the intrusive mode* (*intensity* of voice and probably *phonetics* of penis-synonym) with the sadistic connotation of hurting girls.

About the time of these contacts the writer met Dick under the following conditions. He went to Dick's town in order to observe him in his play group. While searching for the teacher he suddenly heard strange shouts and terrified yells. Looking into a nearby room, which proved to be the toilet, he saw the boy (Dick) *exhibiting his penis and at the same time shouting* into the ear of a girl of approximately his age. The girl was in a panic, he in a strange state of compulsive acting without much affective participation. (Being visual rather than auditory, the observer remembers Dick's facial expression but not the sounds of what he shouted.)

"*D*"

1. *Symbols.* Formerly symbolic ideas referring to the female lack of a penis and his own phallic pride appear undisguised. The modal synonymity between *shouting* and *exhibiting* and between *missing part and bitten off part* is expressed clearly.
2. *Arrangement.* Manic challenge, suppression of voice of conscience, denial of fears.

"*E*"

If the observation had been continued at this point, the challenging of the father figure would probably have proved to be the beginning of the revelation of a complex of ideas connecting his father with the radiator phobia. Other items which lead beyond the intended comparison between the fourth and the fifth contact have been omitted here.

Because in most case abstracts the reader is aware of the lack of detailed accounts transmitting the "feel" of the observational situation, we are concentrating here on a few detailed accounts at our disposal. The reader will now doubtless feel that his hard-won familiarity with Dick's mind should be rewarded with an abstract of his further treatment and development. This cannot be given here. Dick was recommended for thorough child-analytic treatment for which it was necessary to wait until his family's impending move to a larger city. As this is being written the treatment is in process.

A second unsatisfactory aspect of a detailed clinical account would not have been improved by a continuation of our report. On closer observation clinical material becomes more elusive. Every moment of attention, every step in the analytic direction is apt to bring to light a new element which proves to have been all-pervasive from the beginning. Descriptive and analytic restatements are necessary; reconstructions and interpretations, as they gain in volume, change in structure.

What is it then that we have set out to show: the emergence of an all-pervasive and only intra-individually logical (i.e., psychological) complex of ideas which alone gives the single reported behavior items symbolic or metaphoric meaning. Play acts of the kind Dick produced before our eyes are, of course, continually produced by other children in other situations, where they may mean something else or nothing beyond their face meaning. Small cars can "mean" small cars—within less fixed and less rigid configurations asserting themselves over shorter periods and through fewer areas of expression: The *prolonged and expanded sacrifice of the "real meaning"* of surrounding objects for the sake of their metaphoric meaning within a vicious circle of magic ideas is the mark of an emotional arrest.

Dick's dominating ideas express an *"oral complex."* He not only often speaks of biting; he betrays in addition to the world of physical facts as he knows them to be, an image of a world in which the biting wish is universal, its magic consequences unavoidable. When he is in panic, it is because of a radiator that will bite; when he dreams, it is of a being without a mouth. When proud, he shouts; when depressed or oppressed, he whispers. In demonstrating the emergence of this complex in play contacts, we hope to have demonstrated how, with little interference from the side of the physician, the dynamic interplay of two pairs of psychological power-fields forces the complex to the surface, namely, the interplay of *resistance and transference,* and that of the *level of fixation and the level of arrest.*

To begin with the latter pair: The level of fixation is that system of ideas, wishes, fears, defense mechanisms, ways of thinking, differentiating, experiencing which belong to a certain earlier period of childhood and the magnetic power of which is apt to exert again its way of organizing experience and action whenever a consolidation on a higher level of experience and action seems blocked. In Dick's case the fixation level is the second oral (biting) period. His level of arrest, on the other hand, is the intrusive stage, the developmental stage which proves unsurmountable to him. Dick is so hard to understand not only because his level of fixation is genetically an early, structurally a primitive one; the greatest difficulty arises from the fact that his inner world combines and synthesizes contents and principles of organization derived from both the level of fixation and the level of arrest. Thus we find phallic trends expressed in terms of the oral level (of fixation): i.e., his phallic-locomotor aggressiveness and the problems of sexual differentiation are represented as temptations to bite female persons and the fear of being bitten in turn. It is the *intrusive mode* which characterizes for him the functions of both the fixation zone (biting mouth, hurting voice) and the zone of arrest (the dangerous and endangered phallus). It could be argued that such irradiation of the intrusive problem had its center in the phallic stage and only regressively mobilized oral associations. Certain data which cannot be produced here, suggest that intrusion was a problem from the start. However, as we would expect, the conflict of intrusion found its climax and caused a general arrest and disintegration at the intrusive stage.

Caught between the phallic and the oral complexes as though between Scylla and Charybdis, Dick is unable to see how he can avoid the point where these two complexes touch; namely in the idea of hurting a woman, thus both losing protection and provoking punishment. The concept of the world which he reveals and which is not understandable with ordinary adult logic is an attempt to *synthesize the level of fixation and the level of arrest in order to derive a design for self-preservation.*

In the contacts with the physician, then, this "private world" of the child only slowly asserted itself against a *resistance* which tried to isolate it by avoidances and to keep it in a symbolic and metaphoric disguise; only gradually was it represented in connection with the *physician's person.* We have seen that the various aspects of this connection were *transferred,* in a certain disguise and with wishful changes, from former experiences with relations to other women (mother, nurse) and did not originate in the therapeutic situation, except in so far as woman doctor —nurse—and mother—situations have common attributes: they all favor associations such as: child's unsatisfied interest in woman's body, child's secret wishes in regard to woman's body, woman's investigation of child's body, threat to child's body, etc.[2]

The inventory of symbols revealed in Dick's developing play-manifestations rather clearly indicates the boy's concern with situations in which biological haves are threatened by the oral eagerness of the have-nots. Beyond this, only further analysis would reveal the syntax which in the patient's mind gives this inventory some kind of logical order. The reconstruction of what in the patient's mind is the cause of, the condition for, the temporal successor or predecessor of other factors, and how such psycho-logic compares with the historical sequence of events is a task accomplished only with painful slowness. Up to now we know approximately what the patient is talking about; but we do not know what he is saying, i.e., whether he is reporting the past or imagining the future, and whether he is representing what he is doing in such a picture or what is being done to him.

One example of a possible historical reconstruction would be this: The boy saw his sister nursed. He felt strange urges and aggressive impulses, only parts of which probably stood out consciously, as wish for the mother's breast, anger at the sister's favored position, aggression against his mother, etc. Factors of his stage of development (intrusive, locomotor, phallic), of his constitution (oral? schizoid?) and of his personality development (projective and introjective mechanisms) gave this wish dangerous connotations. For example, unlike his sister, he had teeth, a fact which may have been actually pointed out to him. This would be a danger threatening his mother.[3] However, his thoughts seemed also dangerous to his sister as it meant to take her nourishment away, an idea which fused with the other wish, namely, to send her back into the mother's body. His projective introjective ways of experiencing, then, intensified by the oral problem he was faced with, caused him to experience not only what mother and sister would feel if victimized by him, but also made him expect that they wanted to do to him what he wished to do to them.

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[2] In Mary's case we saw how the image "man who plays with me" overcame the doctor association and favored the transfer of her conflict with the temporarily less playful father; while John, armed against all doctors, could not help delivering the secret to me which belonged to his father. But the material, especially in regard to the confession compulsion expressed in *"A," is* influenced by the initial "doctor" expectations of the child. In the psychoanalysis of adults, too, there is a situational connection between the patient's very first associations and memories with the enforced infantile position into which he is asked to revert: the position of lying down, the sacrifice of upright and aggressive motility, the suggestion to lay himself open psychologically before a person who in his turn guards his integrity, the suggested lowering of the critical threshold and of cultural standards in expressing uncritically the flow of association. If not a verbal suggestion, all this certainly represents a situational emphasis which should be kept in mind when evaluating the first selection of childhood material emanating from the patient's associations and resistances.

It may have been during attempts to experiment with and to synthesize in play, theories, phantasies, and strange habits, such ideas of attacks and counter-attacks (in which he alternately identified himself with a dangerous mother and a small, toothless, penisless baby) that the nurse helped by her threat to create a focus for all his anxieties in a radiator phobia. The idea that the radiator could jump and bite appealed to an always easily mobilized primitive level of the boy's mental life on which everything with noisy insides, a warm touch, pipe systems with water, etc., whether inanimate or animate, was somehow identical; while, like all objects of phobias, it also made more tangible, more impersonal, and more discussible, those vague and secret fears which could not be discussed with the protecting adults because they concerned just these adults: the radiator stands for what the child could expect the adult (mother) to do to him if she knew what he secretly wanted to do to her. On the other hand, while an unseen source of danger, this hypnotically attractive phobic object by no means created comfort, and the efforts at eradicating and denying the whole conflict could not relax. Dick dreams of a being which has no mouth at all and we recognized some of his phantasies as picturing a world in which there are no differences between the sexes and between big and little: everybody has and is everything and there need be no envy, no threat. Thus, beside a fear world in which vague dangers are pinned down to tangible objects and into a context with some kind of logical structure, we also see traces of a wish world, another synthetic product of the child's despairing ego.

Other observers and the reader may have arrived at other possibilities of reconstruction. But if we ask at this point who is right, there is only one answer: the patient. Only continued work with him could narrow down possibilities to probabilities and bring about that psychological insight, the formulation of which creates the feeling of high probability in the experienced reader, and if transmitted to the patient, clears his vision into the past and vitalizes his expectation of the future.

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[3] The first 20 hours of Dick's psychoanalytic treatment were signified by the fact that he had every toy bite every other toy, with two exceptions: *a baby doll and a toy cow never bit one another.*

II. Psychoneuroses and Psychosomatic Medicine

8

THE INFLUENCE OF PSYCHOLOGIC FACTORS UPON GASTRO-INTESTINAL DISTURBANCES: A SYMPOSIUM

1. General Principles, Objectives, and Preliminary Results *

by

Franz Alexander

Chicago

THE research upon the influence of psychic factors on gastro-intestinal disturbances, on which we are engaged at present at the Chicago Psychoanalytic Institute, is part of a more comprehensive study, namely the systematic investigation of the influence of psychic factors upon the different vegetative systems: the circulatory, respiratory and the endocrine systems. The principal reasons for beginning with the investigation of parallel cases of gastro-intestinal disturbance are three:

(1) In former years I made certain observations in cases of gastric neuroses which seemed to me not only typical of such cases but also important in respect of the etiology of peptic ulcer, one of the great riddles of internal medicine. In a patient with a chronic gastric neurosis of 15 years' duration, who at one time developed a peptic ulcer, I could trace with great clarity the relation to gastric symptoms of certain emotional conflicts and situations, and with wider experience the wish to study a number of similar cases for further confirmation of these connections became more urgent. In private practice the choice of suitable cases is not always possible but the organization of the Chicago Institute for Psychoanalysis, the primary aim of which is to further research, has given me the opportunity I desired, with a freer choice of parallel cases suitable for such investigations.

(2) The second reason for beginning with the study of the gastro-intestinal tract was the well established fact, recognized both by organicists and psychoanalysts that the alimentary tract is a system which the psychic apparatus uses with great predilection to relieve different emotional tensions. The connection between psychic stimuli and physiologic expression is here direct and relatively uncomplicated. Oral-receptive and

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* A report upon research carried out at the Chicago Institute for Psychoanalysis, reprinted from THE PSYCHOANALYTIC QUARTERLY, Vol. 3, 1934, by permission of the publisher.

aggressive-taking tendencies as well as anal-sadistic and retentive impulses have long and well established relationships to such phenomena as nausea, vomiting, constipation and diarrhœa. In this field our investigation could therefore start from well established premises and we were on more solid ground than we should have been, for example, in the field of the respiratory tract or of the internal secretions.

(3) Finally we could profit from previous studies by internists who for a long time and in increasing measure have recognized the importance of psychologic phenomena as causative factors in a great many disorders of the gastro-intestinal tract.

Though we took our departure from valuable psychoanalytic and medical observations, we found almost all the statements, both from organic and from psychoanalytic circles, incomplete. In medicine the usual attitude toward etiology is that when the organic origin of the symptom has been carefully eliminated, and when at the same time the patient's manifest behavior exhibits what is commonly called "nervousness," then one is justified in assuming psychic factors. After such a diagnosis has been made and expressed in vague terms taken from everyday language, such as "nervous exhaustion," "unstable personality" or "fatigue from overwork," or by the eclectic use of old and new technical terms such as "neurasthenia," "psychasthenia," "psychopathy" and other more or less indefinite expressions, the physician feels himself prepared to give therapeutic advice. The general notion is that the patient's nervous system is somehow overtaxed by the emotional strain of worries, fears, manifest discontent with life as it is, or by simply too much responsibility or overwork. There is little inclination to go more deeply into the nature of the patient's psychologic situation.

Without wishing to minimize the importance of such excellent work as Walter C. Alvarez's "Nervous Indigestion," we must state that the author's general attitude toward psychologic factors is exactly the one we have just described. Nevertheless, studies such as his and those of Russel H. Oppenheimer, George M. Underwood, Albert J. Sullivan and W. B. Cannon—to mention only a few recent publications—indicate definite progress in this field. They show a clear recognition of the fact that psychologic factors may play a causative rôle in organic disturbances, and moreover they attempt to establish through careful clinical observation or experiment the kind of disturbances which may result from emotional factors. They do not, however, attempt to describe precisely the psychologic situation or to find deeper relationships between certain types of emotional factors and certain types of physiologic process. This defect is common to all similar studies undertaken by internists and physiologists with the exception of George Draper and Grace Touraine, to whose work I shall return later.

I do not at this time propose a detailed and critical evaluation of the analytic literature in this field. The pioneer work of Georg Groddeck, Felix Deutsch and Ernst Simmel has the merit of extending the view of hysterical conversion mechanisms from the field of the voluntary and sensory systems to organic diseases. In general in the analytic approach to organic processes there is a great readiness to interpret somatic phenomena as direct expressions of definite psychologic content. The fact that the organic symptoms are usually the final result of a chain of intermediary organic processes is hardly ever fully taken into account in analytic literature. Deutsch, who proceeds with more methodological care than other psychoanalytic authors in this field, in an early paper clearly distinguished between initial disturbances of innervation and those morphological changes which may result following such a functional disturbance of long duration. As will be seen, this concept serves as a basis for our theory of the formation of peptic ulcers. But even Deutsch is not always consistent in the interpretation of organic conditions. For example, in one case he interprets pulmonary hæmorrhage as the direct expression of birth fantasies. This impresses us as even more inconsistent because in the same place he considers the possibility that psychological stimuli may lead to increased adrenalin production and in turn to changes in the blood pressure. The bleeding is then not the direct expression of a fantasy but the result of a change in blood pressure, even if the whole process was initiated by a very specific psychological stimulus (specific fantasies or wishes). To state that in such a case the end-result, the hæmorrhage, has a simple and direct relation to a specific fantasy is not very convincing. It seems unquestionable that conversion in the vegetative nervous system does not always follow exactly the same rules as in the voluntary and sensory systems in which the original concepts of hysterical conversion have been formulated. Whereas in conversion hysteria the unconscious tendency finds a direct expression in the physical disturbances, in organic processes controlled by the vegetative nervous system often a longer chain of intermediary physiological processes is interpolated between psychological stimulus and organic end-result. It is a methodological error to attempt to interpret psychologically an organic symptom which is the end-result of an intermediary chain of organic processes, instead of trying to understand those vegetative nervous impulses in their relation to psychologic factors which introduce a chain of organic events resulting in an organic disturbance. Thus an ulcer of the stomach or duodenum is the direct result of a disturbance in the motor and secretory functions, which disturbance, however, may be caused by emotional factors. Yet the end-result, the ulcer, cannot be interpreted psychologically because, in itself, it has no psychologic significance whatsoever. What *can* be interpreted as a direct effect of psychologic factors is the hyper- or hypo-secretion and the change in the motor activity and blood supply of the stomach. Similarly even psychogenic vomiting itself may not always express anything psychologic, for example, disgust, although the conditions in the stomach which led to vomiting may have been called forth by psychologic factors.[1]

Therefore psycho-physiologic investigations must pay equal attention to psychologic and physiologic causal chains and carefully avoid confusion between the two series.

Pursuant to these considerations, we have made in the past two years at the Chicago Institute for Psychoanalysis a systematic study of psychic factors in gastro-intestinal cases, and we are now extending the investigation to other vegetative systems—the respiratory and the circulatory. The guiding principles of these studies can be summarized under three headings:

(1) Our first assumption or working hypothesis is that the psychic factors causative of the somatic disturbance are of a specific nature. They can be defined as certain emotional attitudes adopted by the patient toward his environment or directed toward his own person. An adequate knowledge of these causative factors can be obtained during the analytic treatment of the patients, and no other method—not even a careful psychiatric anamnesis—can be fully substituted for the analytic approach.

(2) The patient's conscious psychologic processes play a subordinate rôle in the causation of somatic symptoms, since such conscious emotions and tendencies can be freely expressed and relieved through the voluntary system. Somatic changes, the influence of manifest anger, fear and similar violent and outwardly apparent emotions, are of an acute nature and have only a precipitating influence. Repressed tendencies, however, lead to chronic innervations causing chronic dysfunction of the internal organs.

(3) The patient's actual life situation has usually only a precipitating influence on the disturbance. The understanding of the causative psychologic factors must be based on a knowledge of the development of the patient's personality, which alone can explain the reactions to acute traumatic situations.

The object of our research is to establish the affinity of specific emotional factors or conflict situations first to specific vegetative systems and second to certain specific organic expressions within the same system. In addition to these theoretic objectives, we also expect to establish more definitely the therapeutic efficiency of the psychoanalytic approach to such cases and to establish criteria for determining which cases need psychoanalysis and which can be handled by specific practical readjustments of the patient's life.

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[1] I do not question, naturally, that often a specific psychological content can find direct expression also in the vegetative system, for example, blushing, psychogenic sweating, emotionally increased peristalsis, etc.

I shall proceed now to a few general formulations regarding our preliminary results. We have found that it is useful to make a rough preliminary classification of our cases into three groups. We distinguish with reference both to the somatic symptoms and to the typical psychologic conflict situation involved: *First,* a group of gastric cases including a wide range of patients with minor subjective gastric symptoms such as epigastric distress, nausea, heartburn, belching, et cetera, but also severe cases of peptic ulcer. The *second* group consists of cases with the predominant symptom of diarrhœa, cases which are usually diagnosed as mucous or spastic colitis, exhibiting the symptoms of painful cramps and evacuations and often alternation of diarrhœa and constipation. The *third* and last group comprises cases with the predominant symptom of chronic constipation. We shall refer to these three groups as the *gastric* type, the *colitis* type and the *constipation* type.

We turned our attention at first to the patient's manifest emotional relations to the environment, and tried to decide whether certain *manifest* (overt) emotional attitudes together with their immediate dynamic background could be established as typical for the different groups of organic cases. For this purpose we could use analytic material obtained in cases whose analysis had not all been completed or who were accepted only for anamnestic exploration. Of course a series of cases was accepted for complete analytic investigation and therapy, but in a number of cases we contented ourselves with the establishing of surface attitudes and their immediate unconscious background. These unconscious conflict-situations which are the dynamic sources of the surface attitudes can usually be adequately described before a full analytic reconstruction of their genesis has been accomplished.

Our second objective was to try in selected cases to obtain as complete a picture as possible regarding the analytic history of the patients. It should be emphasized that this second problem is at the present stage of our investigation of only secondary importance. One can hardly expect any great conformity regarding genesis since we know that similar conflict-situations may develop from very different individual backgrounds. At first we wished to establish whether there is any constant parallelism of psychologic features in cases with the same organic syndromes. The next step will be the more precise comparison of the details of the developmental history of the patients.

Regarding the first problem, even in this early phase of our research, we have been much impressed by a certain constancy of definite types of conflict-solution, which seem to be characteristic for the different organic groups. This constancy of conflict-solutions becomes very striking if we describe the patient's emotional trends in terms of the three elemental tendencies of (1) the wish to receive or take, (2) the wish to give, or eliminate, (3) the wish to retain. It should be emphasized however that this kind of analysis of the emotional attitudes was not arbitrary but was forced upon us during the course of our case studies. Furthermore we do not claim originality in differentiating these three fundamental tendencies: *in-taking, eliminating* and *retaining,* for the recognition of these elementary tendencies is fundamental to the original concepts of the pregenital tendencies of oral, anal and urethral erotism. Jones' and Abraham's analysis of the anal trends, in differentiating between anal-retaining and anal-eliminating tendencies, and Ferenczi's ideas regarding the amphimixis of anal retentive and urethral eliminating tendencies in genital sexuality, have paved the way for our consistent application of this point of view to cases of gastro-intestinal disturbance.

Apart from identical conflict-solutions a remarkable similarity has been found with respect to certain surface attitudes, conspicuously in the gastric cases and almost equally in the colitis cases. The small number of investigated cases with chronic psychogenic constipation does not yet justify any final statement about typical surface attitudes and conflict-solutions in these patients.

Regarding the genesis of these conflict-solutions we have not yet been able to find any predominantly constant features.

It may be added that, in speaking of typical surface attitudes (emotional attitude toward the environment) and conflict-solutions, we do not refer to trends which we find as one among many other equally obvious features but refer to the predominant central dynamic trends. The predominant *surface* attitude which the patient usually expresses in the very first interviews and in the first typical transference manifestations, and also the underlying dynamic conflict-situations, can as a rule be reconstructed soon and clearly.

In this report we restrict ourselves to the presentation of the most typical surface attitudes and underlying dynamic situations. and only in a few cases we refer in condensed case histories to the genetic material. The problem which we set ourselves here is to describe the different types of gastro-intestinal cases with reference to the relation of their overt behavior, their emotional attitudes and their psycho-sexual manifestations to the determining unconscious tendencies.

The material for our study is preserved in the form of semi-verbatim reports of every analytic interview of every case. These reports contain full material of the patient's free-associations and the physician's interpretations without omissions. We are not planning to publish these case records in their original form but will present the material in a detailed form in later publications.

1. The Gastric Type

This group included 9 cases: 6 duodenal ulcers (3 of which were still active at the time of the analysis), and 3 gastric neuroses. The investigation of these cases has fully corroborated my earlier observation that gastric symptoms often appear in connection with intense oral-receptive tendencies, the wish to be taken care of and loved, which usually are more or less repressed. In most cases the typical conflict-situation can be described as the rejection of strong oral-receptive tendencies on account of their incompatibility with the aspiration of the ego for independence and activity. In these patients the conscious attitude could be best verbalized as follows: "I am efficient, active, productive; or I give to everybody, help people, assume responsibilities, like to have people depend on me, like to be the effective leader and the self-sufficient, active or even aggressive personality." At the same time we find in the unconscious exactly the opposite attitude: an extreme and violent craving for love and the need for dependence and help. These tendencies we find in most of our cases repressed and denied by the patient and associated with violent conflicts.

The next question now is, why does the wish to be loved and to receive become in these patients so full of conflicts that it must be strongly repressed and over-compensated? It is highly characteristic of these patients that in their actual life relations they avoid dependence and assume the exact opposite of the infantile oral-receptive attitude: instead of receiving we see in them often the tendency to give; instead of leaning on others, leadership; instead of dependence, the assuming of responsibility. It is evident that these over-compensations must reactively increase in their unconscious the longing for passive dependence because these individuals live beyond their psychic means in so strongly refusing and denying their need for external help. That their extreme, over-emphasized independence and efforts in life increase the opposite unconscious longing for help does not need further explanation. The question, however, is what is the basis of the phobic rejection and avoidance of the receptive dependent rôle, an avoidance which sometimes leads to an almost grotesquely exaggerated refusal to accept any help from the outside. In all of our cases we see in the unconscious a deep oral regression to the parasitic situation of the infant which in most cases is incompatible with the attitude and ideals of the adult ego and therefore must necessarily be rejected. The analysis of our cases shows among the specific reasons for the ego's rejection of these parasitic infantile claims two predominant motives: (1) a narcissistic injury caused by the infantile claims and manifested on the surface in a sense of inferiority on the one hand, and (2) guilt and fear on the other.

(1) Let us consider the first conflict-motive, the *sense of inferiority.* The extreme infantile receptive cravings create a strong feeling of inferiority, they hurt the aspirations of the ego toward an independent, superior, active and generous attitude.[2] This leads to the typical mechanism of over-compensation. In most of our cases we found that this over-compensation is not only expressed by fantasies of efficient activity, but usually has led to a really active and responsible attitude in life, to real efficiency and success or at least to real efforts in this direction. The tendency to an extreme and concentrated exerting of effort is most characteristic of these patients. However, we also see that this compensatory over-active and often "giving" (generous) attitude again increases in turn the repressed receptive wishes for dependence and love. These patients do not seem willing to allow themselves in practice any gratification of a receptive nature and for this very reason the thirst for rest and receptiveness increases in them as a reaction to their actual over-exertions in life.

One solution of the same conflict between the receptive cravings and their rejection I have described in a former paper. This was an alternating gratification of the two conflicting tendencies; active and receptive gratifications alternate, or find simultaneous expression in different life relations. I refer to the case of the active leader of a great industrial concern who at the same time assumed like a little boy an attitude of extreme infantile dependence on his wife. Although this patient had some neurotic gastric symptoms, patients of the gastric type seldom adopt this solution. As a rule they live for long periods a one-sided life of extreme activity and responsibility, and the dynamic equilibrium between the indulgence of passive-receptive and active-giving tendencies is emphatically dominated by the latter. This general dynamic situation we have found both in male and in female patients.

(2) In addition to the motive of the sense of inferiority caused by the unconscious receptive tendencies, another constant motive for the repression of the receptive tendencies is a *guilt reaction.* The extreme receptivity, I shall call it now parasitic receptiveness, in addition to the feeling of inferiority or shame, leads also to the feeling of guilt and the tendency to compensate for this in-taking attitude with actual giving

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[2] Abraham observed the connection between oral character trends and generosity which he considers an oral character trait. He observed the fact but explained it through identification with the bounteous mother and did not yet see the over-compensative nature of this connection. The same is true of his explanation that the tendency to sucking changes into the need to give. Abraham, K.: *The Influence of Oral Erotism on Character-Formation,* in Selected Papers, pp. 401–3.

of real values such as love, help, efforts for the sake of others, and productive activities of every kind. The guilt reactions however are especially pronounced in cases in which the oral-receptive tendency under the influence of early thwartings in life assume an oral-sadistic connotation. The wish to receive often changes both in women and in men under the influence of early thwarting into the wish to take aggressively: "If it is not given to me, I must take it by force." Usually, however, the passive-receptive and the oral-aggressive tendencies, the wish to receive and to take, are intermingled. It is evident that such strong oral-aggressive grabbing tendencies necessarily must not only lead to an inhibition of these aggressions but make it difficult for the individual to indulge in his receptive wishes, make it impossible for him to accept support or affection from those whom unconsciously he wants to rob.

Our studies have not yet been able to establish any constant background regarding the origin of the strong regression to the parasitic oral-receptive attitude other than the usual conflicts in the field of genital sexuality, conflicts based on guilt feelings, in men centering around castration fear.

In the great majority of our cases we found an inner rejection of passive-receptive and oral-aggressive tendencies. In one case however the tendency towards oral-dependence was thwarted chiefly through external circumstances and to a less degree through inner rejection. In another case we have seen a mixture of both external and internal thwartings of receptive dependent tendencies. In two recently observed cases of severe recurrent peptic ulcer, the extremely strong oral-receptive cravings were not successfully repressed or over-compensated, but appeared more openly in consciousness. The history of both of these cases showed early and extreme oral deprivation in childhood. It seems that their real sufferings in childhood and in later life made it possible for these patients to cling more openly to their receptive claims.

However, the predominance of an inner conflict over the longing for dependence in our gastric cases might encourage the expectation that we shall find a personality typical of the larger group of oral characters with over-compensated oral-receptiveness and oral-sadism which is especially inclined to gastric disturbances. One might even find that this is the peptic ulcer personality which many internists are eagerly seeking to define. Indeed in recent years various clinicians such as Von Bergmann, Westphal, Alvarez, Hartman, Draper and others have come to suspect that factors in the personality are active in the causation of peptic ulcer. They find that certain types of personality are more inclined to peptic ulcer than others. Westphal emphasizes the lability of the vegetative nervous system as characteristic of ulcer patients. His master, Bergmann, attributes the same importance to the influence of the vegetative nervous system upon peptic ulcer formation, and is inclined even to consider psychological factors. Some American authors pay even greater attention to personality factors. Alvarez speaks of the type of efficient, active Jewish business man, the "go-getter" type, as being particularly disposed to recurrent peptic ulcers. Hartman characterizes the peptic ulcer type as a man who is "encountering obstacles which prove to him trial and handicap which he must, because of his nature, endeavor to overcome." He claims that the Indians of Latin America and the Chinese coolies never have ulcers, and explains this as a result of the stoic, almost apathetic attitude, the lack of strain and ambition, characteristic of these races. According to him, ulcer is a disease of the civilized world and afflicts chiefly the striving and ambitious men of Western civilization.

George Draper and Grace Touraine have arrived at a similar assumption. Their investigation of the patient's personality trends were based on a better psychologic background than most clinicians have; they did not rely entirely on the general impression which a good clinician receives from the type of personality he deals with. In their article they quote a series of case histories which they refer to as "analyzed" cases, and other cases which are based on non-analytic but careful anamnestic studies. Due to their finer psychologic method they were able to penetrate beyond the surface and to discover in addition to certain manifest personality factors a typical conflict-situation. They come close to the picture which I have just described. They found typical of their patients a masculine protest, a rejection of unconscious female tendencies, the same tendencies which, according to our psychoanalytic study, we prefer to describe as oral-receptive or oral-sadistic impulses which as we know are closely related to strivings commonly regarded as female. Draper also complemented his studies with anthropologic measurements and tried to describe the peptic ulcer type as characterized psychologically by the presence of a masculine protest and anatomically as the asthenic or longitudinal type.

On the basis of our studies we would also be inclined to assume that in a certain personality type gastric symptoms or even peptic ulcers may more frequently develop than in other types, but the exceptions which we have encountered at a very early stage of our research do not encourage us to expect such a simple and generally valid result. What we find characteristic is not so much a certain personality type as a typical conflict-situation which may develop in very different personalities. Though certain types will be more inclined to become involved in the conflict between receptive and active-giving tendencies and to solve it by overcompensation-mechanisms, yet we see that under *right external conditions* other types of character may develop the same conflict.

For example, in one of our peptic ulcer cases (a forty-six year old man who was subjected to an anamnestic analysis of three weeks) it was much more the external life situation than a deeply located internal rejection of his passive wishes that had deprived the patient of the satisfaction of his oral-receptive tendencies. During his childhood and adolescence he had indulged profusely in receptive gratification, was not at all the leader-type, but on the contrary his attitude entirely lacked the usual ambition so frequent in peptic ulcer cases. He married an extremely able, intelligent, intellectually superior, active woman of the leader type; his marriage, however, soon disappointed all his expectations of finding in his wife a superior person who would serve as a substitute for a generously giving mother. Not that she changed after their marriage, but from the beginning she devoted her life entirely to the promotion of her career, to learning, working and producing. Moreover their sexual life was most unsatisfactory. The wife was frigid and the patient suffered from premature ejaculation. The husband received nothing from his wife, and being thwarted in his receptive tendencies he soon was driven into a competitive attitude toward his wife who even financially was the chief support of the household. Instead of being mothered by his wife, he had been driven by her superiority to an ambition and effort which he deeply detested. This was quite a contrast to the majority of our gastric cases who generally enjoy their responsible and active rôle. I may add that he never succeeded in any active efforts and remained always mediocre in his profession. At the peak of this conflict-situation, after 20 years of marriage, he developed a severe hæmorrhage as a result of a peptic ulcer. But during all those years he suffered from gastric symptoms, chiefly from pain a few hours after eating which was relieved by food, and from chronic hyperacidity. The ulcer appeared after this gastric disorder of 18 years duration.

Shortly after this hæmorrhage he started a sexual relationship with another woman of a motherly type, the exact opposite of his wife. His wife, he complained, never would cook for him, but this woman did. She was a nice, soft, everyday type of woman who did not drive him into unattainable ambitions. He could live with her the modest life of the petty bourgeois, which, as he openly admitted, was his only ideal. Since establishing sexual relations with this woman, all the symptoms have disappeared. Life supplied a cure in allowing him the gratification of his receptive tendencies.

This one example alone shows that it is the thwarting of receptive cravings and not a certain personality type that is of primary importance. Here the specific external situation in which the patient lived created a conflict through external deprivation similar to the one which in the majority of cases is produced by internal deprivation as a result of an inner conflict.

The typical conflict between the repressed receptive infantile wish and the claims of a masculine ego may explain the following interesting observation. One of my former patients' stomach symptoms appeared with great regularity when he saw scenes in the movies or theatre in which the hero was accomplishing strenuous and daring feats and had to concentrate all his forces in a great effort. Our accumulated observations regarding the connection between passive-receptive tendencies and stomach symptoms indicate the following explanation: The patient's identification with such an extremely heroic and masculine character provoked in him a reaction of the infantile receptive part of his personality which found expression in stomach innervations leading to severe heartburn and epigastric distress. Having thus identified himself with a degree of aggressiveness and boldness which exceeded his own capacity, the child in him claimed its own rights as a flight from all these dangers to the securest situation at the mother's breast. This regression to infantile attitudes as a reaction to danger can clearly be seen in traumatic neuroses, in cases of traumatic mutism and abasia in which very often as a reaction to the trauma the patient's ego abandons all faculties which are acquired during development, loses the faculty of walking and speaking and returns to the entirely helpless situation of the infant.

Having described the typical psychologic situation which we find in our gastric cases, I should like to suggest briefly a tentative explanation as to how repressed oral-receptive and oral-aggressive impulses may lead to gastric symptoms and even to peptic ulcer of the stomach or duodenum. This explanation which I am about to advance is an attempt to account for the constancy and predominance of intensive oral-receptive and oral-aggressive tendencies, both of which I should like to summarize under the heading *in-taking tendencies,* which become so intensive as a result of *internal* rejection or, probably much less frequently, *external* deprivation of these cravings.

Most clinicians agree that peptic ulcers are due to certain physiologic changes in the secretory and motor functions of the stomach and possibly also to changes in the blood supply. A great many cases of peptic ulcer develop after a long period of subjective symptoms of epigastric distress and chronic heartburn. It is a logical assumption that the peptic ulcer itself is the end-result of certain dysfunctions of the stomach which in due time lead to morphologic changes, i.e., to the ulceration of the tissue. It is probable that either the decreased resistance of the stomach wall against the gastric juice or in other cases a chronic hypersecretion is the causative factor. The etiologic problem is to establish the causes of these chronic changes of the stomach function which lead to the final result, the ulcer.

The assumption that the ulcers are the end-result of a previous chronic state of functional disturbance of the stomach justifies our procedure of comparing pronounced cases of ulcers with gastric neuroses. This hypothesis is also confirmed by the fact that we find the identical conflict-situation in both functional and organic cases. Also Westphal found an identical picture in cases of gastric neurosis and peptic ulcers regarding their general constitution. He assumes a causal connection between gastric neurosis and peptic ulcers and is even inclined to consider ulcer as an aggravating complication of the neurosis.

In the light of psychoanalytic theory it is not difficult to understand why the functions of nutrition are especially adapted to express the repressed or externally thwarted receptive tendencies which we find predominant in all of our cases. The infantile wish to receive, to be taken care of, to be loved, to depend upon someone else, is most ideally gratified in the parasitic situation of the suckling infant. Thus these emotional qualities of receptivity, the wish to be loved and taken care of, become closely associated in an early period of life with the physiologic functions of nutrition. Being fed thus becomes the primordial symbol (*Ur-symbol*) of being loved.

If the intense wish to receive, to be loved, to depend upon others, is rejected by the adult ego and consequently cannot find gratification in normal life relations, then only the regressive pathway remains open; the wish to be loved becomes converted into the wish to be fed. The repressed longing to receive love and help mobilizes the innervations of the stomach which are since the beginning of the extra-uterine life closely associated with the most primordial form of receiving something, namely with the process of receiving food. These innervations serve as a chronic stimulus of the stomach functions and lead to its dysfunction since this stimulus of the stomach is independent of the normal organically conditioned stimulus, namely the need of food; this stimulus has its origin in emotional conflicts entirely independent of the physiologic state of hunger. Those individuals who on account of the described conflict-situation have to repress and abnegate their over-strong receptive cravings express them in the tacit physiologic language of the stomach functions. Such a stomach behaves all the time as if it were taking or were about to take in food. The greater the rejection of every receptive gratification in life, the greater will be this unconscious wish (we may now call it justifiedly *hunger*) for receiving love and help. They want food not because of organic hunger but as a symbol of love and help.

My present notion is that the stomach under this permanent chronic stimulation behaves constantly as it does during digestion. A chronic hyper-motility and hyper-secretion may be the consequence. The empty stomach is thus constantly exposed to the same physiologic stimuli to which, under normal conditions, it is exposed only periodically when it contains or is about to receive food. The symptoms of nervous stomach, epigastric distress, heartburn and belching probably are the manifestations of this chronic stimulation which sometimes may even lead to ulcer formation.

The question as to whether a constitutional or an acquired weakness of the stomach is responsible for the fact that only certain cases of gastric neurosis develop real ulcers must be left unanswered at present.

There is much experimental and clinical evidence for the correctness of these assumptions. Alvarez, in one of his recent studies, considers such chronic stimulation of the empty stomach as one of the etiologic factors in peptic ulcer.[8] Most interesting in this respect are the experiments of Silbermann who produced ulcers in the stomachs of dogs by sham feeding through an artificial œsophageal fistula. The food which the dog swallows falls on the floor and the dog snaps it up again and goes on eating greedily for perhaps even as long as three quarters of an hour. The result is a powerful stimulation of gastric secretion in the empty stomach which leads regularly to ulcer formation. The process at work in the patients which we have investigated can best be compared with this sham feeding of dogs. They are in a state of chronic stimulation of the stomach, not as a result of the process of nutrition, but in reaction to the psychologic stimulus of longing to be loved and to receive, or to take in aggressively what they do not get freely. Since these tendencies are repressed because of a sense of inferiority in being so receptive and because of guilt for the aggressive, "taking" wishes, they cannot find a normal outlet through the voluntary system. In seeking discharge they are converted into the wish to be fed or to eat, and this is the basis of the dysfunctions of the stomach. Of course, in addition to further psychologic investigation of similar cases, further physiologic corroboration of these ideas is also necessary to prove their final validity.

A very interesting corroboration of the assumption that one of the causative factors in peptic ulcer formation is due to continuous secretion under the influence of chronic psychological stimuli (oral fantasies and oral tendencies) is contained in the experimental studies of Henning and Norpoth in Germany and Palmer and Winkelstein in America. Henning and Norpoth found a maximal permanent secretion (*maximale Dauersekretion*) of the stomach glands during the night in cases of stomach disease. The greatest number of these cases had ulcus duodeni.

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[8] Alvarez, Walter C.: *Light from the Laboratory and the Clinic on the Causes of Peptic Ulcers.* American J. of Surgery XVIII, 1932.

"Perhaps the greatest difficulty with the patients with intractable ulcer or with a tendency to the formation of ulcers is that the gastric cells go on secreting acid at times when there is no food in the stomach to sop it up." . . . p. 222.

"It might be helpful to study also the reactions of the ulcer-bearing patient to sham feeding, and more might be learned about the mechanisms which cause juice to flow when the stomach is empty." . . . p. 226.

They also found high nocturnal secretion in cases of chronic gastritis and also in cases of "vegetative neurosis" with healthy stomach. Similarly Winkelstein observed high acid curves in ulcer patients produced with sham ("psychic") feeding. Furthermore, contrasted with controls, the patients with gastric or duodenal ulcer showed a high nocturnal curve of acidity. These observations are in full correspondence with our views. They show the sensitiveness of the stomach secretion of the ulcer patients to nervous stimuli and they also show that the assumed continuous secretion is present in them. It seems that not the absolute grade of hyperacidity is important but the chronic state of excitement of the stomach, the chronic secretion of gastric juice. Our studies add to these observations the actual predominance and frequency of oral tendencies and oral fantasies which we consider as those psychologic stimuli which lead to the continuous secretion of gastric juice.

Finally I should like to repeat again that our whole concept regarding the psychogenic factors in peptic ulcer is based on the analytically well-established fact that the wish to be taken care of and to be helped which we have so constantly found in the investigated cases is emotionally connected in the unconscious with the wish to be fed. We do not claim originality in establishing this connection and refer to the abundant psychoanalytic literature in which this connection has been described by various authors.

Furthermore this explanation cannot be considered as an attempt to formulate a generally valid etiological theory of peptic ulcer. It refers to a series of observed cases and we have no evidence whatsoever that other cases of peptic ulcer may not develop on a different and perhaps non-psychogenic basis. Moreover, our material unfortunately consists only of cases of duodenal ulcer and consequently all our conclusions are restricted to this localization of ulcers.

Finally a last question must be answered. We found in our cases of peptic ulcer and gastric neurosis a strong regression to the infantile attitude of oral receptiveness and aggressiveness. Furthermore we saw that these infantile cravings become thwarted externally by circumstances but more frequently internally by the conflict connected with the oral-receptive and oral-sadistic impulses which lead to over-compensations, to an over-emphasized independence that again in turn eliminates all legitimate normal satisfaction of the so human claims in the direction of leaning on others and being helped by others. We understood that this increases even more the unconscious craving for the infantile dependent rôle, which longing again mobilizes the emotionally associated wish for being fed, and that this latter wish serves as a permanent stimulus of the empty stomach and causes its dysfunction. This all seems clear and is in harmony with our psychologic and physiologic knowledge and explains the observed facts. However, the same intensive conflicts about oral-receptive and oral-aggressive tendencies connected with the feeling of guilt and inferiority and with the typical over-compensations are common in many forms of neurosis. The psychological situation which we have described in our peptic ulcer cases and gastric neuroses is by no means specific and restricted to these cases. Consequently the conversion of the wish to be loved and to receive into the innervations of the stomach can be considered as only one of the many possible dynamic outcomes of the same unconscious conflict-situation. Why certain individuals choose just this physiological solution remains an unanswered question which belongs to the dark, hitherto unsolved field of the "choice of neurosis." The most probable assumption is that if certain unknown organic factors coincide with the above described psychodynamic configurations, they, together with these psychic factors, will lead to ulcer formation. The constancy of the oral regression and the frequency of the over-compensation and repression of oral-receptive and oral-aggressive trends entitle us however to suspect this psychodynamic situation to be the outstanding *psychic* factor in the etiology of duodenal ulcer. The contribution of psychoanalysis to this problem ends with the description of the typical psychodynamic conditions characteristic of ulcer cases.

2. The Colitis Type

A different solution of the same conflict was found typical of the second group of cases which I call the colitis type. This includes cases usually called mucous or spastic colitis, characterized by constipation alternating with painful diarrhœa with cramps and often mucous evacuations. We have chosen 5 cases in which the diarrhœa is the most conspicuous symptom.

One of our patients has had six to twenty evacuations daily for three years. In order to eliminate the possibility of organic factors, we have so far avoided cases of ulcerative colitis.

On the surface these cases present a very different appearance from the gastric class. Whereas most of our gastric cases emphatically deny all their receptive tendencies, their need for help—their wish for dependence—these colitis patients emphasize in the first place that they do not receive from others what they should in spite of their own great willingness to help and give and in spite of their generosity and interest in others. Whereas the gastric types in reality are efficient, frequently also helpful and generous, or at least make real efforts to be so, the colitis cases do only lip-service in this respect. It is true that before their illness they had often been efficient and active, but afterward they easily accepted a dependent position, which is not the situation in the gastric cases. They readily give up their work, or, if they have worked, they have usually done so as a result of external necessity and have lacked the genuine effort and ambition characteristic of the gastric patients.

The difference between the colitis and the gastric type is similar to that between a phobia and a compulsion neurosis. In the phobia we see only fear and inhibition of activities that have an objectionable unconscious symbolic significance, such as walking on the street which is avoided because it is symbolic of prostitute fantasies or such as writing as a symbol of incest or touching people as a symbol of murderous wishes; but we do not see any neurotic devices that permit the acceptance of these forbidden tendencies.

If a phobia, however, develops into a compulsion neurosis, we find that by submitting to certain conditions the patients are able to achieve all of these symbolic gratifications by certain compensatory symptoms: They can eliminate the fear and guilt-reactions to the rejected unconscious tendencies—they may walk on the street provided they carry out certain ceremonies; if they perform a washing ceremony they may touch people; the rejected tendencies may be gratified provided that other symptoms make atonement for their symbolic fantasied crimes and give restitution for fantasied damages.

Like the phobias, many of our gastric cases are not able under any conditions consciously to permit the indulgence of their receptive or oral-aggressive tendencies, or at least have to fight continuously against them, whereas our colitis patients, like the compulsion neurotics, are able to receive, to make demands on others and be supported by them, provided they pay for it in the form of painful evacuations. In their unconscious, often even in consciousness, we find the same oral-receptive and acquisitive aggressive tendencies which are so strong in the gastric cases, but both the fear and sense of inferiority are eliminated, probably because of the symbolic meaning of the physiologic symptom, diarrhœa. This has the meaning of restitution for what they wish to take from others and also that of activity and aggression in contrast to passive in-taking.

In these cases the lower end of the intestinal tract, the function of which consists mainly in elimination, is mobilized and excited to increased activity. They give anal, or rather intestinal values as a compensation for oral receptivity and aggressiveness, in order to keep up the balance between the receiving and the eliminating tendencies. In two of our cases—both office girls—the envy against the younger sister who replaced them in the receptive rôle of the baby played an important rôle. In one case the presence of this younger sister was a stimulating factor in precipitating the diarrhœa. "I do not want to take anything away from her and even if I do, I pay for it," is the dynamic formula of this symptom.

In the case of an extremely successful business man suffering from a severe case of colitis, we found that even as a young boy he successfully competed with his father in the support of the family. Very early in adolescence he became their chief support. The leading motive of his life is a fantasy of rescuing the parents. "I took my mother from my weak father, but only in order to help her. Apart from supporting her I also helped him." He indeed became very successful in his life and his leading motive everywhere was, "I give real values and therefore I deserve my success." This emotional balance prevails until he is 44 years old. Then at the peak of his success he loses all his money. To give and pay with money had been his means of keeping up his inner equilibrium. Struggling to reëstablish his business, he develops a most severe form of colitis with six to twenty daily evacuations, and these now serve the same inner purpose as did formerly his financial gifts.

Apart from relieving guilt for oral aggressions, these patients have also another inner conflict to solve—the sense of inferiority caused by their oral-receptive tendencies. Especially in one of our female cases we saw very clearly that the diarrhœa, apart from the meaning of restitution, had also the narcissistic significance of masculine activity, and expressed the masculine strivings of the patient. In all of our female cases of the colitis type we found a rejection of the genital female attitude for two reasons. First, it is considered the inferior rôle, emotionally closely connected with parasitic oral-receptive tendencies, but besides that the female rôle is also rejected on account of its aggressive-sadistic, castrative significance. The aggressive-castrative feature of the female wishes is regularly a reaction to the thwarting of the passive-receptive tendencies, and our impression is that the female receptive tendencies are rejected often when thwarting has given them an aggressive-castrative significance. In all of our female cases the diarrhœa both means restitution for castrative wishes and also represents masculine activity in contrast to female receptivity. In one case the wish for restitution by diarrhœa seems on a deep level to be the equivalent of giving birth to a child. That the diarrhœas have both the meaning of restitution and masculine activity and sometimes also the meaning of an aggressive attack we could establish by repeated observation of those psychological conditions which introduced attacks of diarrhœa; especially dreams from which the patients awoke with an attack of diarrhœa have been very instructive. The most constant, outstanding feature which determines the specific character of these cases is the wish for restitution as a reaction to guilt for receptive and aggressive taking tendencies (castration wish).

As yet we are unable to advance a detailed physiological theory to explain how the wish for restitution and giving (productivity) and aggressive tendencies are converted into those physiological changes that are responsible for the symptoms of colitis. It is not difficult, however, to understand why the lower end of the intestinal tract, the main function of which is elimination, is specifically suited to express activity, aggression and the wish to give. By a mechanism similar to those in the gastric cases, we assume that the peristaltic function of the intestines under the permanent psychic stimulus of the wish to eject and to give, becomes independent of the normal physiologic regulations. Normally the peristaltic functions are periodically regulated by the intestinal content, but in these neurotic cases a psychologic tendency independent of the nutritional process stimulates the peristaltic functions. This explanation is based on well established findings of psychoanalysis, namely on the unconscious symbolic significance of the intestinal content as a valuable possession and gift on the one hand, and as a means of aggression on the other. The unconscious attitude which considers the intestinal content as a valuable possession and excretions as a present given to others, corresponds to the earlier coprophilic attitude of the child before it develops the negative disgust attitude toward the excreta. On the other hand, the use of the excremental functions for the expression of sadistic or aggressive tendencies corresponds to the attitude which is developed after the child learns to assume a deprecatory negative attitude toward his excremental function. We find that both tendencies in all cases are intermingled, the emphasis however lies in the colitis cases more on the restitution-significance of the diarrhœas. Regarding these psychologic connections, we refer to the abundant psychoanalytic publications, especially to Jones', Brill's and Abraham's work on anal-eroticism.[4]

Although these formulations should not be regarded as an attempt to advance a generally valid etiological theory of spastic colitis, in all of the investigated cases we were able to reconstruct a connection between the diarrhœas and repressed unconscious tendencies of restitution or aggression. We cannot claim that all cases necessarily develop on a psychogenic basis.

In connection with our findings, an interesting question arises regarding the well-known effect of fear upon the control of the sphincters and on peristalsis. In general one can say that fear mobilizes all kinds of active-aggressive mechanisms of the individual. Cannon has shown, for example, that fear mobilizes the adrenalin production in dogs and emphasizes the teleological nature of this phenomenon in referring to the stimulating effect of adrenalin on the muscle activity and carbohydrate metabolism which the animal needs in defending itself against an external danger. He also points out other effects of the mobilized adrenalin, for example a certain change in the distribution of blood, which is favorable in conditions of increased muscle activity. It is not so easy to understand from the teleological point of view how the excremental function could ever serve for defense or attack. Psychoanalytic experience shows however that the excremental functions are deeply linked with aggressive tendencies in the emotional life, which leads to the analytic concept of anal sadism. Fear mobilizes aggression and excremental elimination is psychologically linked up with aggression. Those who have no "guts" move their bowels under the influence of fear instead of attacking the enemy. In this perspective, the reflex mechanism of moving the bowels under the influence of fear is an example of those pathological, even if common, phenomena in which a nervous impulse is transferred from the voluntary system to the vegetative system. Instead of a muscular attack a symbolic infantile expression of aggression takes place, evacuation having the symbolic meaning of attack.

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[4] Regarding restitution significance of the excretory act, see Dr. Géza-Róheim's *Heiliges Geld in Melanesien,* Int. Ztsch. f. Psa. IX, p. 384, 1923. In this article Róheim shows that in burial ceremonies of the Tonga Islanders the most valuable possessions of the clan are put into the grave of the dead chief but parallel with this ceremony the men evacuate their excrement on the grave.

Regarding the sadistic significance of the excretory act see Abraham, K.: *The Narcissistic Evaluation of Excretory Processes in Dreams and Neurosis,* in Selected Papers.

"Returning to the sadistic significance of defæcation, I may mention that the patient who killed her family in her dream by means of her excretions was severely troubled with nervous diarrhœa. Besides the usual causes, psychoanalysis discovered a sadistic element at the bottom of this symptom. Her diarrhœa proved to be an equivalent of suppressed outbursts of rage. Other analysed cases have confirmed this connection. For instance, I know a neurotic woman who reacts with diarrhœa to any event which excites anger or rage." P. 321.

Undoubtedly this interesting connection could easily lead to further speculations. The well established but peculiar connection between excremental elimination and hostile aggressiveness may be not only an infantile but an archaic mechanism. Possibly there is a fundamental psychogenetic connection between active-aggressive impulses and eliminating innervations. They may belong to the same category. We see many examples in animals in which secretory and eliminating functions, squirting out offensive substances, are used for defense and aggression. The sadistic significance of the excretory act possibly follows the same psycho-physiologic pattern.

3. The Constipation Type

I come now to the third group, the constipation type. Our investigation in this field is only at its beginning and consequently I must restrict myself to a very few remarks derived from the comparison of my former experiences with five cases in the Institute. It is undesirable to generalize from a few cases and from scattered observations based on former practice. Moreover in only one of our present cases is constipation the central symptom, and therefore in the other four cases both those surface attitudes and conflict-solutions which might be characteristic for the constipation types are necessarily mixed with other, more predominant features. Yet there are some trends which seem to be characteristic. A pessimistic attitude toward receiving help from others or depending upon them seems to prevail. These patients seemingly do not expect anything from anybody, in contrast to the optimistic attitude of Abraham's oral types. At the same time, however, there is a more or less conscious, very extreme sense of obligation to give, of which the patient tries to rid himself by renouncing all conscious receptive tendencies. "I can not expect anything from anybody and therefore I do not need to give anything. I hold on to what I have."

One of my constipated patients keeps constantly arguing with himself about emotional or financial obligations toward other people. This patient always has to prove to himself that he does not need to support his brother or send money to a woman because sending money would really only do harm. In emotional relations he has the same attitude. He has strong guilt feelings for letting down women who have certain hopes regarding him and tries to escape this feeling of obligation by a deep renunciation of any acceptance or even expectation of receiving anything from others. He does not want to be bothered with any problems in which giving is involved. He has an older sister and a younger brother. He arranged his obligations toward them in a very characteristic way. His income automatically is divided into certain portions and a considerable part of it goes into a life insurance policy for his brother, another into life insurance for his sister and a third part into his own life insurance. The rest he spends in a tolerably rational and not overly thrifty way. He explains that he does not want to have any worries about whom he should support. He wants this problem to be eliminated from his life and to be taken care of automatically.

A patient of Wilson's presents a strikingly similar picture. This twenty-six year old architect suffers both from an obsessional neurosis and also from obstinate constipation which he relieves by the continued use of cathartics. His father has had severe financial reverses during the past three or four years and is dependent to some slight degree on the patient and his brother for support. The patient has an open conflict about supporting his father. He says he would like to live away from home, but that is impossible because they need his money. His rationalizations continue somewhat as follows: "I feel guilty for not contributing more, but if I did my father would only use it for useless purposes, so the only way I can do is to save money so that when he has a complete financial breakdown, I shall be able to come to his rescue." His emotional attitude toward his family is similar. He says that they do not deserve his love or respect as they are themselves the cause of his neurosis and that people like them should not be permitted to have children. In the unconscious there is an extreme guilt feeling toward his father and brother for this hostile attitude. This guilt feeling is the main obstacle to his becoming successful.

He always emphasized that he does not expect anything from anybody and he himself must get everything he needs. But also, there is a great uncertainty regarding his ability to do so and therefore he has to stick to what he has.

This case offers the well known mechanism of anal retentiveness as a reaction to oral inhibitions.[5]

In a deeper layer we find that the aversion to all kinds of obligation to give is based on intense castration fears which the patient tries to get rid of by renouncing and denying his oral tendencies.

I wish here also to recall a case of chronic constipation which I have described on another occasion. I refer to the egocentric, neglectful artist's wife who during her marriage of two years suffered from an obstinate form of constipation. This was spontaneously relieved on the day on which her husband brought her a bouquet of flowers, the first gift since their marriage. To this gift she reacted with the first spontaneous evacuation in two years. This present from the husband destroyed her dynamic formula, "Inasmuch as I do not receive, therefore I do not have to give."

In addition to the positive evaluation of the intestinal content as a valuable possession we found in these cases also an anal-sadistic attitude, the inhibition of which contributes to the anal retention.[6] The psychological connection between the two different attitudes, between the withholding of something valuable and the inhibition of elimination on account of its aggressive soiling significance, could be reconstructed as follows: The spiteful rejection of the obligation to give leads to the attitude, "Well, if I have to give, by all means you may have it, but nothing better than excrement." The ambivalent attitude toward the excrement makes this change of emphasis possible. The conflictual rejection of this anal-sadistic attitude is the basis of the constipation.

Constipation as rejection of the obligation to give corresponds to the positive evaluation of the excreta as a valuable possession, whereas constipation as a result of inhibited aggressions corresponds to the negative attitude toward the intestinal content. Thus, like the diarrhœa, constipation also can result either from the positive or from the negative cathexis of the excremental act: from the refusal either to give up a value or to use the excrement for aggression.

A forty-two year old patient who suffered from a chronic constipation of long duration had an extreme inhibition of the sexual instinct.

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[5] Abraham explains neurotic parsimony in people who are inhibited from properly earning a livelihood: "The pleasure in acquiring desired objects seems in this case to have been repressed in favor of pleasure in holding fast to existing possessions." *Loc. cit.*, 399.

[6] A connection of constipation on the deep layers with the fear of castration has been known since Freud's study, *The History of an Infantile Neurosis*. However, constipation resulting from the inhibition of anal-sadistic impulses which we find in three of our cases very clearly, according to my knowledge, is not so generally familiar.

He suffered from a severe headache whenever there was an opportunity for intercourse with a sexually attractive girl. The analysis revealed that the sexual act in his unconscious was equivalent to anal soiling. After this connection became conscious the patient's sexual inhibitions and constipation disappeared and he started at this late date his first sexual affair.

A similar depreciative attitude toward sexuality is also very characteristic of two of Wilson's cases of chronic constipation. Both patients have the tendency always to choose depreciated sexual objects and at the same time show an over-compensated aggression toward women. This manifests itself in impotence and ejaculatio præcox as a result of denying every aggression toward women. The direct connection of this attitude with the constipation has not yet been established in their analyses.

We submit these few observations without claiming that they describe typical attitudes and conflict-solutions of the same validity as those characteristic mechanisms which we find in the gastric and colitis cases. Justification for including these observations lies in the fact that the mechanisms now described corroborate the well established emotional reaction, namely, that the tendency to withhold the excrements often expresses the spiteful rejection of the obligation to give, typical for cases with oral deprivation and inhibition of the acquisitive tendencies.

4. Summary and Conclusions

In comparing the predominant conflict-situations and their solutions in each group (gastric type, diarrhœa type, and constipation type), I could express the differences by the following schematic formulæ:

The most conspicuous feature of the gastric cases (gastric neuroses and duodenal ulcers) is intense receptive and acquisitive wishes (in-taking or incorporating tendencies) against which the patient fights internally because they are connected with extreme conflict in the form of guilt and sense of inferiority which usually lead to their denial. "I do not want to take or to receive. I am active and efficient and have no such wishes." Our assumption is that the stomach symptoms are conditioned by the repressed and pent-up receptive and aggressive taking tendencies which serve as chronic psychic stimuli of the stomach function. In some cases the receptive and acquisitive wishes are not *internally* inhibited by conflicts but *externally* by circumstances.

The dynamic formula of the colitis cases is: "I have the right to take and demand, for I always give sufficiently. I do not need to feel inferior or guilty for my desire to receive and take, because I am giving something in exchange for it." Our assumption is that the diarrhœa, apart from expressing aggressions, serves as a substitute for the giving of real values.

Finally in the constipation cases the dynamic background of the symptom may be verbalized as follows: "I do not take or receive and therefore I do not need to give." Our assumption is that the constipation is a reaction against the obligation to give. This intense sense of obligation to give, on deeper levels, is linked with the fear of castration.

On account of the impressive parallelisms regarding the dynamic structure of the gastric cases there seems to be very little doubt that the content of the chronic psychologic stimulus responsible for the secretory and motor dysfunctions of the stomach are intensive in-taking tendencies both of passive-receptive and of aggressive-taking nature. These tendencies have become intense, usually on account of inner rejction and probably much less frequently because of external deprivation of the wish to be loved, taken care of, and dependent. These impulses if eliminated from the voluntary system cannot find adequate gratification in the normal life relations of the patients and consequently find expression in vegetative innervations (dysfunction of the stomach).

Thus our studies can explain why the impression of a number of authors has been that personalities who are over-active in life, like to take responsibilities and make concentrated efforts, are so often found among the peptic ulcer cases. Our analyses show that these tendencies toward over-activity, efficiency and ambitious effort are compensations to cover up the underlying, strong dependent-receptive tendencies which in turn are increased because of the fact that they are not allowed even normal expression. A vicious circle is at work here. The high claims which these individuals have regarding efficiency, activity, productivity and success lead them to make over-exertions which then stimulate the opposite, receptive side of their nature which in turn necessitates stronger and stronger over-compensations. The gastric symptoms are in direct causal connection with the repudiated in-taking tendencies and not with the overt picture of over-exertion and activity.

It seems to us equally well established that the content of the chronic psychologic stimulus responsible for the increased peristalsis in colitis is (1) either a narcissistic wish to produce and chiefly the urge to make restitution (excrement = gift) or (2) an anal-sadistic impulse in which the excrements are used as weapons of aggression. In these cases the psychologic impulses to make restitution, to produce, or to attack are expressed through the vegetative system instead of the voluntary system. The excretory functions because of their symbolic significance of giving and attacking are substituted for either giving real values to others (restitution, production) or attacking others.

It should be emphasized that different types of surface attitudes are sometimes intermingled, as different organic symptoms may be present in the same cases. One of our gastric cases shows, besides the predominant gastric symptoms, also a periodic tendency to diarrhœa. The diarrhœa cases almost always show intermittent or periodic constipation, the psychologic significance of which we have not yet established. Possibly they are due merely to physiologic mechanisms. The following diagram should therefore be considered as a simplified scheme. It expresses the overt and unconscious psychologic features present in the most extreme or typical cases and does not do justice to the mixed types. The third column, in which the attitudes and mechanisms of constipation are listed, is added with great reservation. It should serve rather as a tentative suggestion to stimulate further research and we shall not hesitate to change it as the evidence carries us further. (See diagram on page 148.)

Our investigation leads to the conclusion that the gastro-intestinal tract, according to its three major functions of in-taking, retaining and eliminating, is especially suitable for the expression of these three elementary tendencies, if their normal expression through the voluntary motor system or through the sexual apparatus is inhibited through inner conflicts.

The upper end of the gastro-intestinal tract, corresponding to its normal function, is well-fitted to express the receptive or taking tendencies, whereas the lower end of the tract is more suitable for the expression of giving and retentive tendencies. Both the in-taking and the giving-eliminating tendency may assume either a more constructive (erotic) or a more destructive connotation:

In-taking ╱ passive receiving
In-taking ╲ aggressive taking

Eliminating ╱ giving of positive value (restitution, birth)
Eliminating ╲ aggressive and sadistic elimination (attack, soiling)

I am convinced that the analysis of the individual's emotional attitude to his environment in the terms of these three major tendencies, (1) to receive and take, (2) to retain, and (3) to give, will not only prove useful for the understanding of gastro-intestinal disorders, but will also be found to have more general significance. These three groups of emotional tendencies seem to be of the most elementary nature and their recognition makes possible the further analysis of the emotional reactions of the individual to the environment, including the sexual relations.[7]

It seems to me that the analysis of the content of male and female sexuality into these three elementary tendencies can give a more specific meaning to less definite terms such as "active" and "passive," "male" and

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[7] Ernest Jones in an earlier writing (1918) suggested the understanding of love relations on this basis: *Anal-Erotic Character Traits,* in Papers on Psycho-Analysis. "It is true that, from both the psychological and physiological basis of love, the greater part of all love-life is modelled on the prototype of giving and receiving." . . . p. 700.

Table of Ulcer, Constipation, and Colitis Types

	GASTRIC TYPE	COLITIS TYPE	CONSTIPATION TYPE
Typical conscious attitudes toward environment schematically verbalized.	"I do not want to receive or to take. I have no such wishes. I am independent, active and efficient."	"I have the right to take and demand because I give sufficiently. I do not need to feel inferior or guilty on account of my receptive and grasping wishes because I am giving something in exchange for it."	"I do not take or receive and therefore I do not need to give."
The deeper dynamical background of the symptoms.	The denied and repressed oral-receptive and oral-aggressive tendencies are converted into the original pattern: into the wish to be fed or to eat. These tendencies serve as chronic psychic stimuli of the stomach independent of the process of nutrition.	1. The permanent wish to give restitution for oral-aggressive tendencies, and 2. the wish to be active and aggressive in the ejective (and not oral-receptive) way serves as permanent irritation of the peristalsis independent of the digestive functions. The diarrhœa substitutes for giving of real values, for making real efforts and being actually active, and for being aggressive.	1. The rejection of the obligation to give on account of fear of loss (castration-fear) and 2. the inhibition of anal-sadistic impulses (to give spitefully in a destructive way) are the chronic inhibitory stimuli leading to constipation.
The content of the psychic stimuli which cause the dysfunction.	1. Receiving 2. Taking	1. Giving (restitution for receiving or taking). 2. Aggressive elimination.	Retaining because of 1. fear of loss 2. fear of doing damage.

"female." In pregenital sexuality these three elementary tendencies appear unmixed. In the later organizations of sexual life, active and passive, male and female strivings may be thought of as mixtures in varying proportions of these three more elementary tendencies. It seems to me that such an analysis promises a much more accurate description of the sexual organization than is possible in terms of the more general concepts now current.

It must be left for future research to determine whether or not the dynamic relation of the individual to his environment can be exhaustively reduced to these three groups of elementary tendencies.

Physiologically the process of life can well be described in terms of the three major functions of *in-taking* of substance and energy from the environment, partially *retaining* it during the process of growth, and *elimination*—elimination of the end-products of metabolism, elimination of substances for the purpose of propagation, and the constant production of thermic and mechanical energy. It would not be surprising at all if it should turn out that the most elementary psychologic tendencies of the individual correspond to these three biologic phases of life, and that psychologic dynamics—as Ferenczi has assumed in his *"Genitaltheorie"*—correspond to the biologic dynamics of life.

9

ELECTROENCEPHALOGRAPHIC AND PERSONALITY CORRELATES IN PEPTIC ULCER*

by

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INTRODUCTION AND DEVELOPMENT OF PROBLEM

THE ATTEMPT to produce objective evidence of the interrelationship of psyche and soma has long been an intriguing medical problem. In this attempt the close relationship between the nervous system and the gastrointestinal system has been frequently emphasized. According to Eusterman—" . . . The causative factor which is operative in the vast majority of cases (of peptic ulcer) is the psyche mediated through the autonomic nervous system, thus engendering a morbid physiologic state conducive to the initiation, extension, and chronicity of the lesion."

Draper states: "Gastro-enterology, dealing with the stomach and intestines, is concerned with vital apparatus which is perhaps more than any other physiologic system exposed to blows from both ponderable and imponderable worlds. Physical, chemical, and thermal onslaughts alternate with rapid fire of emotions, such as fear, anger, jealousy and sexual confusion.

It is not necessary that the emotions be perceived in consciousness to be effective in modifying the functions of organs equipped with smooth muscle. Ordinarily, if the organism is in good emotional equilibrium, the body mechanism moves easily at its work, quite automatically and is unnoticed by the individual. But, if there is a disturbance, no matter how minute, of the balance between the human animal and either of its two universes (palpable universe and personal universe) signs of that disturbance are immediately apparent." The scientific literature on digestive malfunctions and its relationship to emotions is extensive and no attempt will be made to review it here. The reader is referred to the exhaustive works of Dunbar, Alexander, Alvarez, Cannon, Schilder, etc.

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Among the earliest attempts to objectively demonstrate a link between cortical and gastrointestinal activity is that of Bochenfontaine. In 1876 he pointed out that faradic stimulation of the region of the sigmoid gyrus of the dog caused peristaltic contraction of the pyloric region of the stomach, followed by the inhibition of the pylorus itself, and that sometimes such stimulation caused increased movements of the small and large intestine. Often peristalsis of the large intestine so induced, was so forceful that it carried fecal contents ahead of it.

The early recognition of personality types in gastrointestinal functions and particularly in peptic ulcer is illustrated by the statement of Gilles de la Tourette that there was a strong hysterical trend in the patients with the peptic ulcer and emphasized as a possible cause of ulcer the well-known vaso-motor and trophic disturbances of hysteria. Charcot likewise suggested that the "crise noir" or vomiting of blood might sometimes be hysterical. Von Bergmann, nearly fifty years later stated that an ulcer often hides behind the "crise noir" of Charcot. The vital contributions of Freud to the advancement and clarification of this psychosomatic interrelationship are well known. He says, for instance, "The intestinal catarrhs which occur quite frequently during infancy, produce sensitive imitations in this zone, and we often hear it said that intestinal catarrh at this delicate age causes 'nervousness.' In later neurotic diseases, they exert a definite influence on the symptomatic expression of the neurosis, placing at its disposal the whole sum of intestinal disturbances."

In the psychoanalytic literature the contributions of Felix Deutsch to this subject are noteworthy. He clearly distinguishes, for instance, between the initial disturbances of innervation and those changes which may result following such a functional disturbance of long duration. More recently, the work of Draper and others expresses the conviction that emotional conflicts in an individual with an ulcer diathesis is alone essential to the production of the disease.

Franz Alexander and his school have made important contributions in elucidating the unconscious forces associated with peptic ulcer. He states: "The alimentary tract is a system which the psychic apparatus uses with great predilection to relieve different emotional tensions. The connection between psychic stimuli and physiologic expression is here direct and relatively uncomplicated. The investigation of these cases (duodenal ulcers and gastric neuroses) has fully corroborated my earlier observation that gastric symptoms often appear in connection with intense oral-receptive tendencies, the wish to be taken care of and loved, which usually are more or less repressed."

In the last few years a new approach to the study of personality has come into being. Saul, Davis, and Davis studying the EEG characteristics of 30 patients undergoing psychoanalytic therapy noted a rather consistent relationship between one of the characteristics of the EEG and the fundamental personality structure of the individual. They found that a high alpha index is characteristically associated with a passive, dependent, receptive attitude towards other persons provided that this attitude is freely accepted and not thwarted or inhibited internally. Low alpha indices were usually associated with a consistent, well-directed, freely indulged drive to activity. This correlation has been followed up by Davis and seems basic.

With these two factors in mind (*i.e.*—1. The claim that peptic ulcer cases are associated with a definite personality constellation, and 2.—EEG findings may be influenced by personality factors), it was felt that an EEG study of peptic ulcer patients from the point of view of their alpha index would be of distinct value in the critical evaluation of the validity of these findings. If this study were supplemented by personality data, its value would be even more enhanced.

PROCEDURE

We determined, therefore, to study a series of 100 peptic ulcer patients from the points of view indicated above, *i.e.*, electroencephalographic and personality data. The patients were all men, unselected except for the verification of their peptic ulcer and were taken consecutively from the gastrointestinal clinics of the Bellevue General Hospital. The patients were chosen in rotation as they entered the clinic for diagnosis or follow-up treatments and were given appointments for EEG study in the same manner as appointments are made for other special studies.

It might be worth noting at this point that the area this clinic serves is roughly the lower East side of New York City and draws its clientele from a generally marginal and sub-marginal economic group. They had all been referred to the clinic exclusively for diagnosis and follow-up study related to the ulcer complaints.

ELECTROENCEPHALOGRAPHIC TECHNIQUE

The records were taken in a room which was dimmed only by having the shades drawn. There was no talking while the records were being taken, but the ordinary hum of general hospital activity was quite audible to the patient. The apparatus and technician were in the same room as the patient during the run. While the record was being taken the subject was lying quietly on a comfortable couch, awake, but with eyes closed.

The procedure and apparatus were explained to the patient before the run and every effort made to place the patient at ease and in an unapprehensive emotional attitude. Electrodes were placed over the occiput, vertex, and frontal areas bilaterally. The occipital electrodes were placed about 2 cm. above the external occipital protuberance and about 4 cm. out from the mid-line at this point. The vertex leads were placed about 6 cm. out from the mid-line, and the frontal leads were placed about 1 cm. below the hair line or its approximation and about 4 cm. out from the mid-line. These points were arbitrarily selected and no rigid effort at identical placement was attempted. The electrodes were small solder pellets held in place with collodion and good electrical contact was established with electrode paste (Sandborn). The indifferent electrode placement was on the ear lobes.

The instrument used for this study was a six-channel ink-writing occilograph with its amplifiers and broad band filters built by Mr. Albert M. Grass. The records were taken with tuned filters having a broad peak at 10 cycles per second in the circuit. The recorded frequencies are linear up to 50 cycles per second, at which point they are cut out deliberately by a "muscle filter," so that extraneous muscle potentials and electrical disturbances are eliminated.

Monopolar and bipolar routine records were run on each patient but for the purposes of this study only the monopolar occipital records generally were studied. The sample selected for the alpha index determination was the best 100 cms. (machine speed—3 cms. per second) in a 2 minute run. The lowest amplitude counted was 7 to 10 microvolts and the alpha waves had to occur in sequences of at least 3 to be counted. Runs were made with eyes open and closed to determine the "eyes open" and "eyes closed" effect on the alpha rhythm.

RESULTS

The general protocols are given in Tables I to III.

ELECTROENCEPHALOGRAPHIC DATA

The distribution of the alpha indices of the 100 cases studied are plotted graphically in Figure 1A. Figure 1B shows the data gathered by Davis and Davis and our data broken up according to their classification of rare (0–24 per cent alpha), mixed (25–49 per cent alpha), subdominant (50–74 per cent alpha), and dominant (75–100 per cent alpha). It will be noticed that our results differ significantly from the normal distribution in a number of particulars:

1) The curve shows two peaks, the first below an alpha index of 10 and the second around an alpha index of 90 per cent. In other words, the

cases "lump" in two categories, the rare and the dominant (Figure 1B). The findings of 71 per cent of our peptic ulcer cases showing a dominant alpha index (75–100 per cent) in contrast to the normal group who show 20 per cent of cases with a dominant alpha index would seem to establish the thesis that the peptic ulcer cases studied have a significantly greater tendency to show higher alpha indices than do the normal group. The expectancy of a dominant alpha index, therefore, in peptic ulcer patients is about three and a half to one as compared with non-peptic ulcer patients.

2) The mid-portion of the curve contains only 9 patients as can be seen from the percentage breakdown (Table I), *i.e.* for practical purposes the mixed and subdominant group can be eliminated from consideration.

TABLE I

Alpha Distribution of 100 Cases of Peptic Ulcer

ALPHA RHYTHM	ALPHA INDEX	NUMBER OF CASES	TOTALS
Dominant (75–100)............	95	19	71
	90	22	
	85	15	
	80	10	
	75	5	
Subdominant (50–74)...........	70	2	5
	65	1	
	55	2	
Mixed (25–50).................	45	1	4
	35	2	
	25	1	
Rare (0–24)...................	20	2	20
	15	4	
	5	14	

3) The possible significance of the peak at the low end of the alpha index scale will be considered later in greater detail under the personality data. Suffice it to say at this point that this rare alpha group seems to constitute a group of individuals, "different" from the dominant alpha group from the point of view of their electroencephalogram as well as from other findings to be discussed later.

The average alpha frequencies are tabulated in Table II. These fall almost identically into the range defined for the normal alpha rhythm

TABLE II

Average Frequency (Cycles per Second) of Alpha Runs

FREQUENCY	NUMBER OF CASES
13	1
12	1
11	7
10.5	4
10	33
9.5	8
9	18
8.5	7
No frequency determination made on record with alpha index less than 25.	21

despite the fact that there were a total of 16 abnormal and questionably normal records (Table III).

TABLE III

Normality of EEG of Ulcer Cases

ALPHA RHYTHM	NORMAL RECORDS	QUESTIONABLE RECORDS	ABNORMAL RECORDS
Dominant	69	1	1
Subdominant	3	1	1
Mixed	3		1
Rare	8	8	4
Total	83	10	7

The average alpha voltages of the records were divided into high, moderate, and low voltage. The distribution is shown in Table IV.

This also falls within the criteria established by the Davises.

In determining the normality of the records (Table III) studied, it is well to keep in mind that these were single studies. The ordinary criteria of stability of frequency and voltage, constancy of pattern, etc., were used in evaluating the records. It should be noted in this connection that 12 of the 17 abnormal and questionable records were in the alpha indices below 25 per cent. This would be in keeping with the probability that a

TABLE IV

Average Voltage (uv) of Alpha Waves in EEG

VOLTAGE GROUP	NUMBER OF CASES
High Voltage, Over 50 uv	21
Moderate Voltage, 20–50 uv	62
Low Voltage, 10–20 uv	17

good strong alpha rhythm will disguise or distract attention from some irregularities and questionable abnormalities. This is in agreement with the point of view stated by Davis.

It will be noted in the breakdown of our cases by decades (Table V) that while our cases include an age range of 21–70, 80 per cent of the cases fall in the age range between 41–70.

TABLE V

Distribution of Ulcer Cases by Age

AGE RANGE	NUMBER OF CASES
21–30	7
31–40	13
41–50	30
51–60	34
61–70	16

In an endeavor to evaluate the apparent weighting of our series in the older age range, we divided our cases into decade groups, from 21–70 years of age (Table VI).

TABLE VI

Distribution of Cases by Alpha Rhythm and Age

ALPHA RHYTHM	NUMBER OF CASES IN EACH GROUP RANGE				
	21–30	31–40	41–50	51–60	61–70
Dominant (75–100)	5	12	19	22	13
Subdominant (50–74)			2	1	2
Mixed (25–49)			1	3	
Rare (0–24)	2	1	8	8	1

The table illustrates the distribution of these groups, when subdivided into dominant, subdominant, mixed, and rare classes. From this data and other statistical analysis, it was felt that the age distribution of our series of 100 peptic ulcers did not significantly alter the distribution of their alpha indices.

Furthermore, as noted, our age distribution is shifted towards the older groups. If this factor were to influence our results, it should tend to lower the alpha indices. Judged from this point of view, our findings gain additional significance.

From the above, it might appear as if age did not affect the alpha index in peptic ulcer patients in the same manner as it affects the alpha index in normal people. It should be noted in this connection, however, that a good strong alpha rhythm tends to obliterate irregularities in the record and would keep the alpha index up for that reason. This factor is probably the basis for the apparent incongruity mentioned above.

ULCER DATA

The ulcer cases used for this study, as has been stated previously, all presented radiological evidence of peptic ulcer, 96 cases showing positive evidence, and 4 cases showing presumptive evidence. The ulcers are presented according to site in Table VII, in which are also shown the operative procedures undergone when necessary.

TABLE VII

ULCER DATA OF 100 CASES OF PEPTIC ULCER

ULCER TYPE (X-RAY EVIDENCE)	NUMBER OF CASES	PERFORATION (OPERATIVE SUTURE)	RESECTION
Duodenal	81	6	8
Gastric	11		5
Pyloric	3		
Double Ulcers:			
Duodenal and Gastric	1		
Duodenal and Pyloric	3		
Double Duodenal	1		

It is of interest to note that the duration of ulcer complaints as manifested by the patients in this series, run from 6 to 35 years in 63 per cent of our cases (Table VIII).

Speculation as to the effect of the economic and intellectual status of our patients and the effects of these factors on their recognition, evaluation, and attention to their ulcer complaints would be interesting. An ade-

TABLE VIII

Duration of Ulcer Complaints

NUMBER OF YEARS	NUMBER OF CASES
1–5	37
6–10	29
11–15	17
16–20	7
21–25	3
26–30	4
31–35	3

quate attempt to appraise these factors was not made for the purposes of this paper.

From this series, it would seem that alcohol plays little part in the etiology or aggravation of the peptic ulcers. Only 10 per cent of our patients gave histories of alcoholism in causal relationship to the onset or progress of their complaints.

The histories as elicited from patients and by referring to their hospital and clinic records were typical in 89 per cent of the cases and atypical in 11 per cent.

Personality Data

In considering the personality data, we feel that it is not capable of statistical analysis in the same sense as the previous data. The material was gathered, by force of circumstances, from interviews lasting about one-half hour. In many cases necessary material could not be obtained because of unavailability of social service follow-up, language difficulty, etc.

Going over our series with these factors in mind, we have, nevertheless, noted certain trends which seem significant. It was felt that a longitudinal analysis of the series would be more valuable than studies of individual patients. For this purpose, the series was divided into two groups, those with alpha indices of under fifty per cent and those with alpha indices over fifty per cent. There were found to be twenty-four patients in the former and seventy-six patients in the latter group. The data gathered were subdivided into the following classifications: 1. Work attitude. 2. Family size and sibling position. 3. Parental identification. 4. Attitude to mate. 5. Attitude to friends. 6. Childhood history. 7. Traumatic precipitating factors where present.

The attitude of the two groups toward their work would seem to show that significantly more of the high alpha index group held their jobs for a long period of time (over ten years) than did not. In the low alpha in-

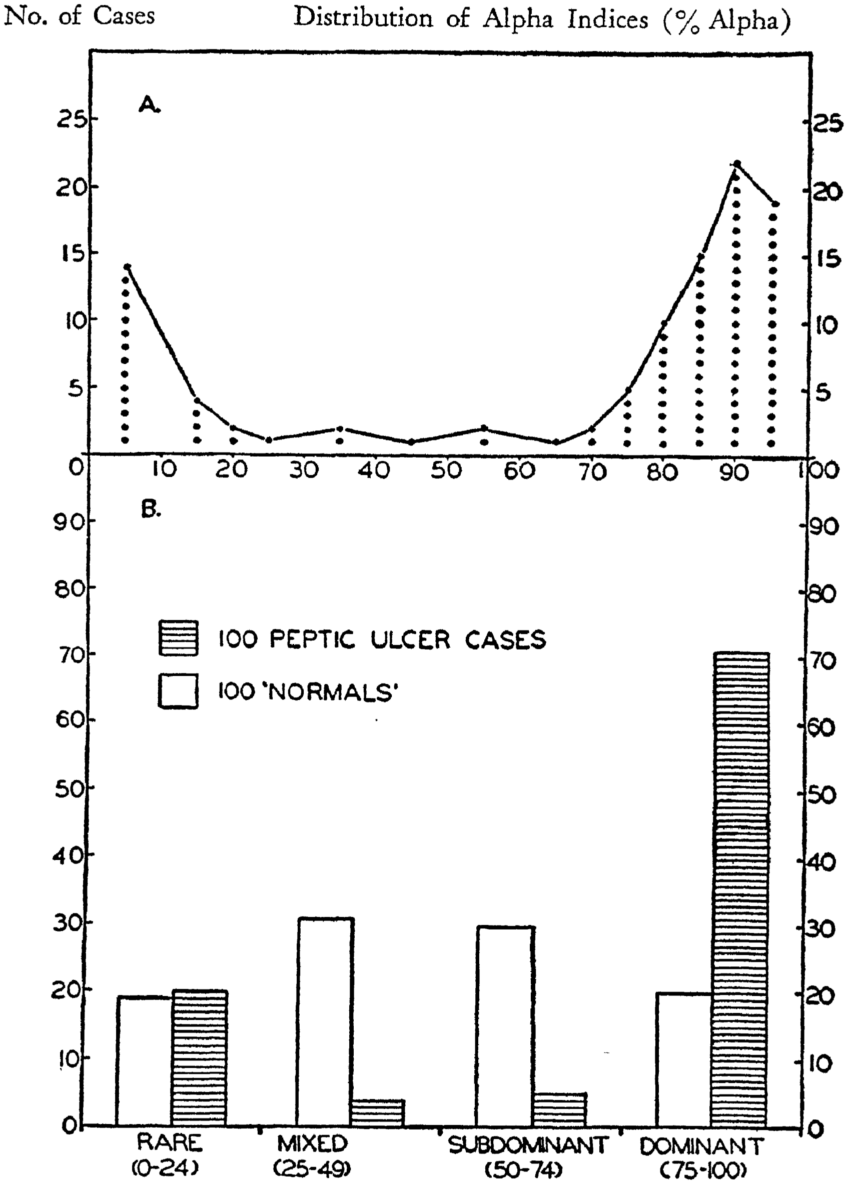

FIG. 1

A. Alpha indices of 100 peptic ulcer cases.

B. This series of "normals" is a group of 100 instructors at the Pensacola Air Field. Their age was "for the most part not over 30." No filter. Monopolar occipital lead. (H. Davis.)

The distribution of this group of normals is very similar to that found by Davis in his series of 401 normals. The age range for this group was 17–70 and contained both sexes. The distributions for male and female were similar.

dex group about the same number held jobs for a long period as did not. The high alpha group remained content on their jobs and did not get into as many difficulties as did the low alpha group. This finding must be viewed with some caution as the high alpha index group seems to have a slightly greater number of older patients proportionately than does the low alpha index group.

In considering the family size of the two groups, it was noted that significantly more patients of the high alpha index group came from families of less than eight children. On the other hand, it was also noted that significantly more patients of the low alpha index group seemed to come from families of more than eight children. These findings would seem to imply that the low alpha index group (*i.e.* aggressive, out-going, independent, etc.) come from larger families than do the high alpha index group (*i.e.* passive, receptive, dependent, etc.).

The data on parental identification show no apparent trend, *i.e.* about the same proportion from each alpha index group identifying with each parent; although the whole group of one hundred males seems to be a mother-identifying group as might be expected.

In their relationship to their mates, it was noted that the proportion of unmarried men in the high and low alpha index group was about the same. About the same number from each alpha index group were aggressive towards their mates ("boss of the house," "wife does what I say," "demand my rights," etc.), but significantly more of the high alpha index group were passive towards their mates (dependent, "let her have her own way," "don't argue," etc.).

In their childhood attitude, we note no apparently significant differences; about the same number of both alpha index groups feeling that they were out-going and aggressive as children, and the same number feeling that they were passive as children.

In their attitude towards their friends, about the same proportion in the two groups are out-going (seek friends, "defend myself in arguments," "don't let them step on me," etc.). The high alpha group, however, showed a significantly greater number who were passive in relationship to their friends ("don't argue," "don't look for too many friends," etc.).

Again we wish to emphasize that the data assembled in this section should be considered as representing tentative trends and indications. Much more gathering of material is necessary before statistical validation can be attempted. We are pursuing further studies along these lines.

Discussion

1. Electroencephalographic data indicate a definite relationship between peptic ulcer and a dominant alpha record, *i.e.* three and one half

times as many dominant alpha records are found in the peptic ulcer group as in the normal group.

2. Dominant alpha records are correlated with passive, receptive, dependent types of individuals. This was determined by the studies of Saul and Davis.

3. Our results would indicate, therefore, that in peptic ulcer, by this criterion (high dominant alpha record correlation with passive personality) we have established a close relationship between peptic ulcer and a passive, receptive, fundamental personality structure.

4. Our curve of alpha index distribution shows not only that the great majority of patients have a dominant alpha record, but that practically all other remaining patients fall into the rare alpha group. This would indicate that we are dealing with two groups, *i.e.* a dominant alpha group, showing passive, dependent attitudes, and a rare alpha group showing a "different" and possibly opposite personality structure.

5. This is indicated by a review of our personality data. In considering the individual items obtained under this heading, the following formulations might be considered:

> In general, we seem to be dealing with a mother-identifying group. As they develop into maturity, the two groups develop differently in this regard. The high alpha index group seems to continue to be dependent on a mother surrogate, but the low alpha index group manages to achieve independence.
>
> In considering the two factors of childhood attitude, and adult attitude towards friends, we see an analogous situation to that noted above in the factors of relationship to mother and relationship to mate. It would seem from the data presented that these one hundred peptic ulcer patients, in general, start out as a seemingly undifferentiated group as far as the outward manifestations of their underlying fundamental passivity go. As they develop, one group shows a strong "reaction formation" to this underlying passivity. This group shows a low alpha index. The other group apparently continues to accept its fundamental passivity. It shows a high alpha index.
>
> This formulation would be in agreement with the statement of Saul to the effect that fundamentally passive individuals who show a well-developed "reaction formation" will show a low alpha index. The interesting question as to whether alpha indices of these patients change as they grow up from childhood can only be speculated upon from the data presented.

6. It would seem apparent that this type of combined somatic, electroencephalographic, and personality study is a useful approach to the evaluation of psychic factors in somatic diseases and to the study of personality generally.

SUMMARY

One hundred male cases of proven peptic ulcer have been studied from the point of view of electroencephalographic and personality data. The

findings would seem to indicate the value of this type of study for the better understanding and evaluation of the underlying personality structure and the psychic factors in patients with this disease. Some further implications of this study have been suggested for the investigation of diseases with a large psychic component.

10

EVIDENCE ON THE GENESIS OF PEPTIC ULCER IN MAN*

by

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Recent studies have shown that prolonged continuous acceleration of acid secretion in the stomach by the repeated administration of histamine in beeswax results regularly in the development of duodenal ulcer in a wide variety of laboratory and domestic animals. Somewhat earlier it was shown that in dogs the maintenance of hyperacidity by continuous stimulation of the vagus or by continuous sham feeding resulted in ulcer.

While all these stimuli seem to cause ulcer by a common mechanism, namely by effecting a continuous hypersecretion of acid in the stomach, not one of the three is ordinarily operative in human beings subject to ulcer. It was with the purpose of discovering some stimulus which results in definite, sustained acceleration of acid production and which may have been recurrent in the ordinary course of life in ulcer patients that our studies were undertaken. We found that day to day life situations which provoked certain patterns of emotional reaction induced hypersecretion in the stomach comparable to that resulting from prolonged absorption of histamine, vagus stimulation and sham feeding.

Previous Work

Wittkower found that while certain subjects reacted to test situational stimuli by decreased gastric function in line with Cannon's hypothesis, certain others showed accelerated acid production in the stomach. Gordon and Chernya, who studied acid secretion in several human subjects with gastric fistulas, found that one of their subjects whose fasting secretion

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had previously been within normal limits began to show hyperacidity when he became homesick, restless and resentful of the experimental procedures. More recently Mittelmann and Wolff published a study of normal subjects and patients with peptic ulcer. During periods of experimentally induced anxiety, hostility and resentment, they found a rise in acidity and increased contractions in the stomachs of all the patients suffering from ulcer and in many of the normal subjects. Moreover, they were able to reverse this process and cause a decrease in acidity and motility by inducing in their patients feelings of contentment and well-being.

Reviewing the life histories of the patients with ulcers, Mittelmann and Wolff found that the patients had been subject to prolonged emotional turmoil involving mainly conflict, anxiety, guilt, hostility and resentment. The occurrence of pain and even hemorrhage was correlated with periods of special stress and accentuation of these feelings.

In view of this evidence we undertook studies on a subject whose gastric mucosa could be examined readily for prolonged periods.

Method

Our studies have been made on a man aged 56 who at the age of 9 completely occluded his esophagus by drinking scalding hot clam chowder. Since then he has fed himself through a gastric fistula 3.5 cm. in diameter, surgically produced shortly after the accident. It is his custom to put food into his mouth and, after tasting and chewing it, to expectorate it into an ordinary kitchen funnel inserted into his stoma. Through the stoma has protruded on his abdominal wall a collar of gastric mucosa essentially similar to that within the cavity of the stomach. The patient is in excellent health, has rare digestive complaints and is employed as a diener in our laboratory. He is a small, wiry man of Irish-American stock, unschooled, married and the father of one child. He is shy, sensitive, proud, stubborn and slightly suspicious. He is fun loving but very conscientious.

We made estimates of vascular changes by comparing changes in color in the gastric mucosa to a standard color scale, which was calibrated after the method of Munsell. That these variations actually reflect changes in blood flow was shown by measurements with a blood flow recording device reported elsewhere.

The stomach was emptied every fifteen minutes and the juice obtained was analyzed in the usual manner. The output of acid by the parietal cells was estimated with reference to volume and acid concentration and was expressed in cubic centimeters of 0.166 normal hydrochloric acid according to a method of calculation described elsewhere.

In many of the experiments records of the stomach contractions were made by the familiar technic of inflating in the organ a balloon connected to a recording manometer.

Careful note was made of the patient's mood and the content of his thoughts and preoccupations. These data were collected during the experiments as well as at separate daily interviews. An attempt was made to classify the emotional and other reaction patterns as contentment, joy, gratitude, feelings of helplessness, dejection, doubt, fear, frustration, guilt, sadness, anxiety, tension, hostility and resentment. None of these existed alone, but usually it was possible to recognize one or two as dominant. The emotional reactions were then correlated with the various measurements of gastric function.

The emotionally charged situations were not experimentally induced. Spontaneously occurring life situations, problems and conflicts were utilized. Some of these involved events arising from time to time in the laboratory. Others occurred in the setting of the subject's home life. His reaction to each of these experiences was evaluated in the light of his individual personality pattern, which is described in detail in another publication. Thirty-four observations on stomach function accompanying several different affective states were made. From these illustrative examples will be presented.

Observations

Secretion, Motility and Vascularity Under Conditions of Relaxation and Well-Being.—During periods when the subject was relaxed and apparently contented, the color of the mucosa remained relatively constant in the neighborhood of 50. Contractions were usually of low amplitude and rhythmic, making a pattern of three small waves a minute.

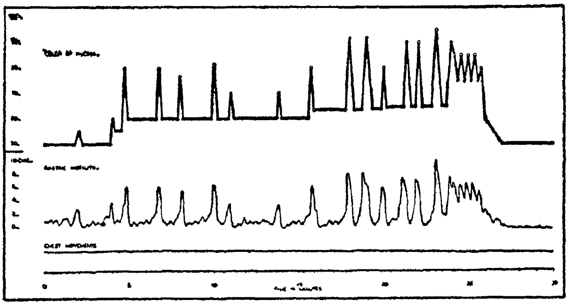

Fig. 1.—A phase of accelerated gastric function showing waves of vigorous contraction and the associated blushing of the mucosa. Acid was being produced at the rate of 4 cc. of hydrochloric acid an hour during the quiescent phase before and after. During the period of vigorous contractions acid production was accelerated to 16 cc. an hour.

Gastric juice accumulated in the stomach at the rate of approximately 8 to 15 cc. an hour. Total acid under these circumstances averaged 50 clinical units. In terms of parietal cell output, according to our calculation, this represents about 3 to 5 cc. of 0.166 normal hydrochloric acid an hour.

Spontaneous Periodic Phases of Accelerated Gastric Function.—Every two to three hours there occurred in the stomach a transitory phase of hyperemia, hypersecretion of acid and vigorous contractions. These followed a rather constant pattern, as shown in figure 1, and lasted only twenty to thirty minutes. After the phase of accelerated gastric function had subsided the stomach assumed its former "basal" condition. The changes obtained during test situations were carefully evaluated with regard to these periodic phases of spontaneous gastric hyperfunction.

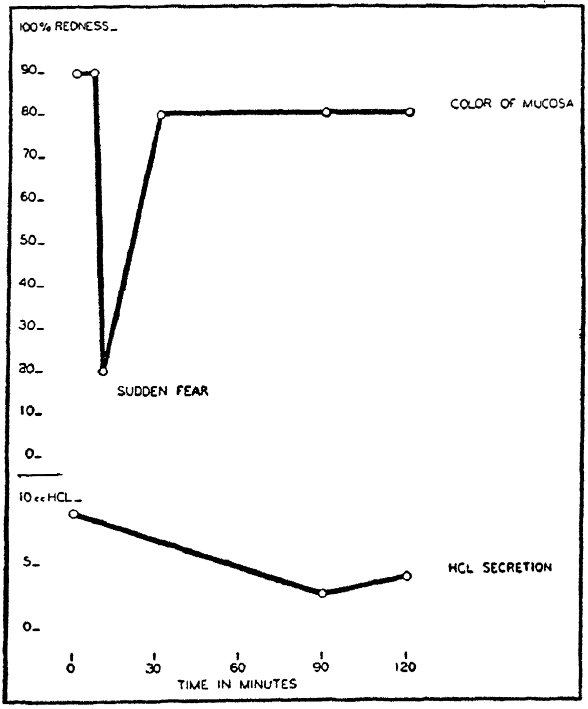

FIG. 2.—Pallor of the gastric mucosa and decreased rate of acid secretion accompanying fear.

Correlation of Gastric Function, Acid Production, Motor Activity and Vascularity.—Combined measurements of the rate of acid secretion, gastric contractions and vascularity were made under a wide variety of circumstances and after various stimuli. At all times increased acid production was accompanied by hyperemia, and hyperemia always indicated increased acid production. Vigorous contractions, while they did not always accompany hyperemia, did not occur when the stomach was pale.

Depression of Gastric Function in Association with Fear and Sadness.—Fear: The patient suddenly experienced intense fear one morning in the midst of a phase of accelerated gastric function. An irate doctor entered the room muttering imprecations about an important protocol which had been lost. Our patient had mislaid it and feared that he had lost the record and his job. He lay motionless on the table and his face became pale. Prompt and decided pallor occurred also in his gastric mucosa, and associated with it there occurred a fall in the rate of acid production. A minute later the doctor found his paper and left the room. Forthwith the face and gastric mucosa of our patient regained their former color (fig. 2).

Sadness: Sadness, dejection and feelings of self reproach were accompanied in our subject by taciturnity, lack of "energy," slowness of movement of the body generally and by pallor of the gastric mucosa, decreased acidity and motor activity. Even the stomach's normal response to the ingestion of food was inhibited under these circumstances.

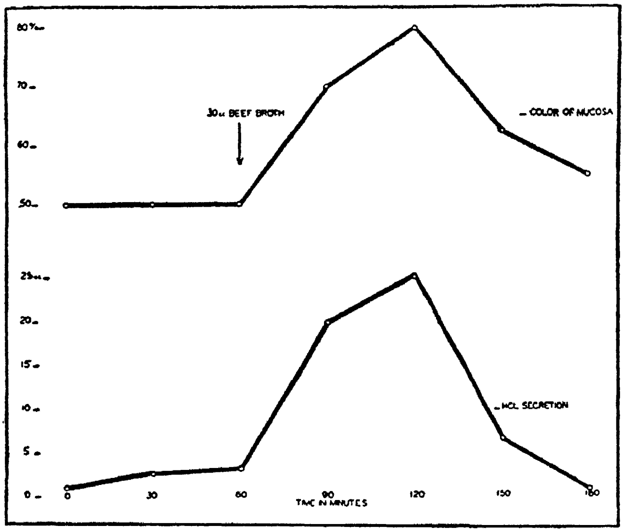

FIG. 3.—Usual response to ingestion of beef broth.

One morning the patient was depressed and uncommunicative over having lost through his own negligence an option on a house which he had long been eager to acquire. He was limp and dejected and filled with feelings of self depreciation and refused to relate the nature of his trouble until several hours later. We administered beef broth directly into his stoma and noted that the hyperemia and acceleration of acid production and motility, which regularly followed ingestion of beef broth, were partially inhibited. Figure 3 shows normal response to beef broth and figure 4 the response obtained during sadness and dejection.

Acceleration of Gastric Function in Association with Emotional Conflicts Involving Anxiety, Hostility and Resentment.—During a period of "basal function" of the stomach one-half hour after a spontaneous phase of accelerated function, a member of the staff entered the room to pay off and discharge our subject from a job he was doing for the doctor after hours in order to earn extra money. The doctor had complained earlier that he was slow, ineffective and charged too much. The subject, who takes great pride in his conscientious attitude toward all duties, resented heartily these charges. When the physician told him he need not report for work any more he accepted the rebuff politely, but quickly his stomach became red and engorged and soon the folds were thick and turgid. Acid production accelerated sharply and vigorous contractions began. This happened despite the fact that another spontaneous phase of accelerated gastric function was not to be expected for at least an hour and a half (fig. 5).

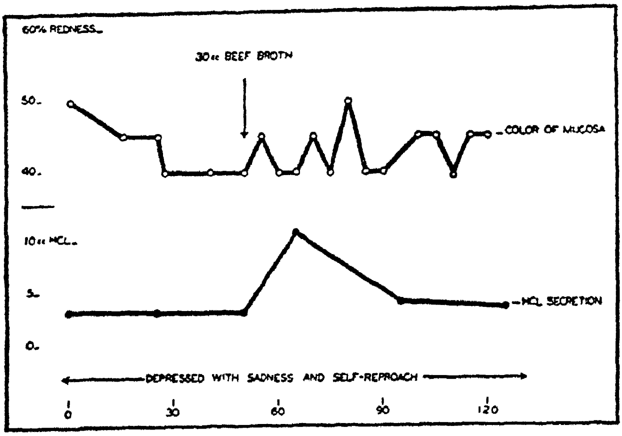

FIG. 4.—Inhibition of beef broth effect during sadness and dejection.

We noted these changes frequently in association with feelings of strong hostility and resentment on the part of the patient, and also with anxiety. It is noteworthy that these incidents occurred far more commonly than did those described earlier, in which there was an associated inhibition of secretion, motor activity and vascularity.

The degree and duration of the changes in gastric function were also roughly proportional to the intensity and duration of the emotional reaction.

An illustration of prolonged acceleration of gastric function is as follows: The patient was usually in a state of comparative financial insecurity, and because of this he was compelled to accept gifts from a certain benefactor. The latter meddled in our subject's personal affairs and when denied a hand in managing them threatened to withdraw support. During two weeks of much meddling our patient became intensely anxious about his future welfare and resentful of the activities of his benefactor. He was eager to throw off his dependence. At the end of the two weeks the opportunity for release came in the form of a raise in pay for his job at the hospital. This good fortune he received with the deepest feelings of relief. Figure 6 shows the average levels of acid production and color of the mucous membrane of his stomach during the two weeks of emotional turmoil and during the two weeks preceding and the two following it.

Gastritis, Pain and Mucosal Erosions.—In the presence of hypermotility and hypersecretion, the gastric mucous membrane not only became red but engorged and turgid as well. The folds became thicker and succulent and the lining of the stomach presented the picture designated by gastroscopists as "hypertrophic gastritis."

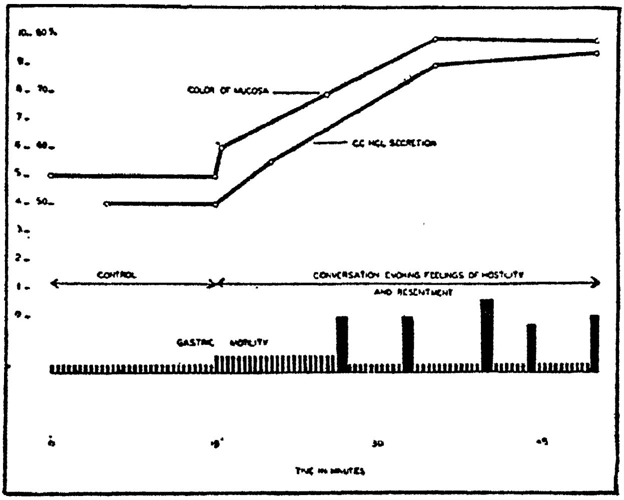

FIG. 5.—Accelerated gastric function accompanying emotional conflict involving feelings of hostility and resentment.

During periods when his stomach was in this state, occurring as they did in association with emotional conflicts involving anxiety, hostility and resentment, the patient often complained of heartburn and abdominal pain. Indeed it was possible to demonstrate experimentally that the tissues of the stomach wall were more sensitive to pain in their hyperemic state than normally. Vigorous contractions of a magnitude insufficient to cause pain in its normal state were painful when the stomach was intensely engorged.

Furthermore, the susceptibility of the mucosa to injury resulting in hemorrhage was found to be greatly enhanced in this condition of engorgement and hyperemia. Even relatively trifling traumas such as striking the membrane with a glass rod or stroking it with dry gauze resulted in small erosions and bleeding points. Frequently during periods of such hyperemia vigorous contractions produced bleeding points around the periphery of the exposed collar of mucosa without the necessity of instrumentation.

Healing in the Stomach: The Protective Properties of Mucus.—Ordinarily these small erosions and bleeding points which occurred from time to time were quickly covered with mucus and healed uneventfully in twenty-four hours or less. The failure of any of these lesions to persist as a chronic ulceration will be shown to be due largely to the effective protection afforded by the mucus.

When irritating substances such as mustard, strong acid or alkali were placed on the lining of the stomach without pains being taken to remove the mucus coating, only a slight to medium erythema resulted. When the accumulation of protective mucus was continually aspirated away, however, and mustard was applied directly to the cells of the mucosa, acute inflammation and edema resulted. Bleeding points and small erosions appeared throughout the area involved. Pinching and faradic stimuli applied to the mucosa in this condition caused pain, although pain did not occur when these stimuli were applied to the mucosa in its normal state.

The protective powers of mucus have been shown to consist of three distinct mechanisms: First, it presented a continuous slippery surface to irritants. Second, by combining with and neutralizing the acid in immediate contact with it, it maintains the acidity of the stomach lining itself at a relatively low level. When a drop of Toepfer's solution was allowed to fall on the wall of the stomach it failed to indicate an acid reaction despite the fact that a sample from a nearby pool of accumulated gastric juice contained 65 units of titratable free acid. An important aspect of this protective device is the fact that mechanical and chemical irritation of the gastric mucosa as well as the presence of acid in high concentration in the stomach accelerates the rate of production of mucus. Circumstances arose, however, when the amount of acid in the stomach exceeded the powers of this compensatory mechanism. Then the third protective property of mucus was invoked. The mucus precipitates and forms an insoluble, continuous, tough, membranous coating over the cells of the gastric mucosa, thus insulating them from chemical attack.

In the duodenal cap the protection afforded the cells is far less elaborate, and whatever mucus does cover the cells is likely to be brushed aside by food. Thus the corrosive contents of the stomach can gain access to the base of a minor erosion.

Result of Continued Contact of Gastric Juice with a Mucosal Erosion.—To demonstrate the effects of contact of gastric juice with an eroded surface, we conducted the following experiment:

Two small bleeding points were produced in the gastric mucosa by traumatizing it with a smooth-edged forceps. These tiny eroded areas were kept in contact with gastric juice of a titratable total acid of 90 units for one-half hour. The protective mucus which accumulated rapidly in this region was sucked away frequently and fresh gastric juice applied. A sharp acceleration of acid secretion and concomitant hyperemia of the whole gastric mucosa resulted from this procedure, and these effects persisted for one-half hour after the exposure of the erosions to the action of gastric juice had been stopped. After the undisturbed lesions had become covered by mucus the color and acid values returned to normal.

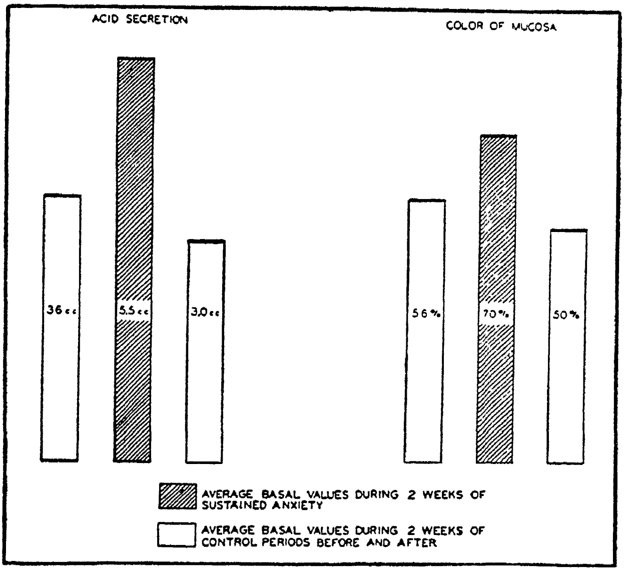

FIG. 6.—Prolonged gastric hyperfunction accompanying sustained anxiety for two weeks.

This experiment supports the idea that the acceleration of acid secretion resulting from erosions being bathed in gastric juice is one mechanism involved in the maintenance of hyperacidity in patients suffering from peptic ulcer.

Gastric Juice and Chronic Tissue Damage.—On the peripheral border of the collar of mucous membrane which lay exposed on the patient's abdominal wall a situation similar to that encountered in the duodenal cap prevailed. Here, owing to defective production of mucus, there was little or no protective covering over the mucosa. This state of affairs enabled us to test the consequences of inadequate supply of insulating mucus by the following experiment:

A small erosion which occurred in this region was continuously subjected to the action of the patient's own gastric juice for four days.

Within twenty-four hours the denuded surface had increased in size. The base of the lesion became deeper and it bled intermittently. At the end of four days it measured 4 mm. in diameter and presented the punched out appearance of a chronic peptic ulcer with well defined edges and a granulating base. Traction or pressure applied to the lesion caused pain. While this lesion was present the whole mucosa remained relatively engorged, and acid production was maintained at a high level.

After four days the ulcer and surrounding area were covered by a protective petrolatum dressing and thus isolated from the gastric juice. Complete healing took place within three days, leaving no grossly recognizable trace of the lesion behind.

Thus it has been shown that when an unprotected mucosal erosion is exposed to the digestive action of gastric juice additional tissue damage occurs and chronic ulceration results.

COMMENT

The difference between a hypersecreting stomach and actual gastritis is, as we have shown, mainly one of degree. Prolongation of inordinate hypersecretion in the stomach with the inevitable accompanying hyperemia, then, carries with the hazard of possible structural damage to the lining of the stomach or even more likely to that of the duodenal cap, since the latter is less well protected.

Once an erosion has been effected, contact of acid gastric juice with the denuded surface would perpetuate the vicious cycle as illustrated in the experiment described.

We have shown that situational factors resulting in emotional conflict with anxiety, hostility and resentment may induce in the stomach profound and prolonged hyperemia, hypermotility and hypersecretion. Adequate neural mechanisms exist to explain these phenomena, and indeed experimental ulcers have been produced in animals by lesions in the brain stem, by prolonged stimulation of the vagus and by infusion with acetylcholine. The necessity for the gastric hyperfunctioning to be sustained as well as pronounced is apparent in the failure of large repeated doses of histamine in aqueous solution to result in ulcer. When a sustained effect was obtained, however, by administering the drug in a slowly absorbed medium, peptic ulcer regularly resulted. The reason why our patient has not acquired peptic ulcer may be that the hyperemia and hypersecretion which we have observed in the presence of conflict have been relatively transitory. He is not the sort of person who harbors grudges or maintains emotional stress for prolonged periods. Usually he expressed his feelings either in words or in action, and his more serious conflicts were relatively short lived. Since the occurrence of gastric hyperfunction in certain emotional settings has been demonstrated, however, and since the destructive power of excessive gastric secretion has been established, one may infer that these emotionally charged situations are involved directly in the genesis of peptic ulcer in man. Hyperacidity, gastritis, minor mucosal erosions and finally peptic ulcer occurring during the course of sustained emotional tension should not be looked on as separate clinical entities. The evidence indicates that they are all phases of the same pathologic process.

SUMMARY AND CONCLUSIONS

A patient with a large gastric fistula whose mucosa is readily accessible to view has been studied with regard to the possible genesis and persistence of tissue damage. It was found that:

1. Acid in small amounts was continuously elaborated in the subject under basal conditions.
2. Spontaneous transitory phases of accelerated secretion of acid occurred from time to time. These were accompanied by blushing of the mucous membrane and vigorous contractions of the stomach wall.
3. Emotions such as fear and sadness, which involved a feeling of withdrawal, were accompanied by pallor of the gastric mucosa and by inhibition of acid secretion and contractions. This complex was encountered infrequently in our subject.
4. Emotional conflict involving anxiety, hostility and resentment was accompanied by accelerated acid secretion, hypermotility, hyperemia and engorgement of the gastric mucosa resembling "hypertrophic gastritis." This series of events was much more commonly observed in our subject. It was associated with gastro-intestinal complaints of the nature of heartburn and abdominal pain.
5. Intense sustained anxiety, hostility and resentment were found to be accompanied by severe and prolonged engorgement, hypermotility and hypersecretion in the stomach. In this state mucosal erosions and hemorrhages were readily induced by even the most trifling traumas, and frequently bleeding points appeared spontaneously as a result of vigorous contractions of the stomach wall.
6. Contact of acid gastric juice with such a small eroded surface in the mucous membrane resulted in accelerated secretion of acid and further engorgement of the whole mucosa. Prolonged exposure of such a lesion to acid gastric juice resulted in the formation of a chronic ulcer.
7. The lining of the stomach was found to be protected from its secretions by an efficient insulating layer of mucus, enabling most of the

small erosions to heal promptly within a few hours. Lack of such a protective mechanism in the duodenal cap may explain the higher incidence of chronic ulceration in this region.

8. It appears likely, then, that the chain of events which begins with anxiety and conflict and their associated overactivity of the stomach and ends with hemorrhage or perforation is that which is involved in the natural history of peptic ulcer in human beings.

II

GASTRODUODENAL DISORDERS:* AN IMPORTANT WARTIME MEDICAL PROBLEM

by

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SPEAKING in New York in the fall of 1940, Hincks gave some rather striking figures on the incidence of neuropsychiatric disorders among the Canadian forces. He reported that 16 per cent of the men invalided home from England since the outbreak of the war had shown this type of disability. An additional 26.5 per cent suffered from peptic ulcers—a condition, in his opinion, frequently associated with emotional disturbance and tension. Subsequent reports from England suggested that the incidence of neuropsychiatric disorders is surprisingly low if contrasted with the figures for 1914–1918. But one finds many reports on the frequency of dyspepsia among the British armed forces, with peptic ulcer holding a particularly prominent position in statistics. British authorities stated that gastroduodenal disorder is the most important medical problem of the war and that dyspepsia represents the single most prevalent type of disease among military patients. The controversy regarding the significance of emotional factors in the causation of gastroduodenal disorder continues to rage. To a neuropsychiatrist this aspect of the problem is of interest, particularly in view of the growing tendency to consider peptic ulcer as a psychosomatic disorder, with the possibility that emotional tension generated by the stress of war is appearing in this guise rather than in the more flagrantly neurotic displays which were so prominent in 1914–1918. To an internist or a gastroenterologist this striking manifestation must be of interest because of the marked contrast in frequency of dyspepsia to the figures reported in the last war.

SURVEY OF LITERATURE

Reports from the War of 1914–1918.—One can find almost no data on the frequency of dyspepsia during the war of 1914–1918. For instance, in Hurst's book, "Medical Diseases of War," one finds no discussion of

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dyspepsia as such and mention of gastritis occurs only incidentally in a chapter on hysterical vomiting. From Hurst's discussion one gains the impression that acute gastritis was a common development in all forms of gassing—with the irritation of the stomach caused by swallowing the excessive secretions of saliva and nasal mucus produced by the gases. Vomiting was set in motion as a protective reflex but subsided in a week, at the latest, unless hysterical vomiting developed. In occasional patients the condition progressed into chronic gastritis which gave rise to mild dyspeptic symptoms that did not include vomiting. Hurst commented on the frequency with which patients with hysterical vomiting were held in hospitals for months and were considered to be suffering from gastritis, though their vomitus did not contain any trace of blood or excess mucus. Rarely, the condition was erroneously diagnosed, and a patient was held under treatment for gastric or duodenal ulcers. He commented on the rapidity with which these vomiting patients reacted to psychotherapy.

One finds almost no reference to dyspepsias or gastroduodenal disorders in the history of the Medical Department of the United States Army in the first World War. In the medical and casualty statistics for the period between April 1, 1917 and Dec. 31, 1919 there is a report of 1,551 gastric ulcers (a rate of 0.42 per thousand soldiers) and of 979 duodenal ulcers (a rate of 0.26 per thousand). The occurrence of other diseases of the stomach (which may include dyspepsia) is reported as 36,941 (a rate of 9.98 per thousand). Kantor presented an account of his experiences in the gastrointestinal service of an Army hospital located in the southern United States. During his service 714 patients were admitted. If one eliminates from this group the 403 patients with intestinal parasitosis, one finds that among the 311 patients with digestive disorder of various types 24 had duodenal ulcers and 5 had gastric ulcers, but more than a third (113) of the 311 patients had gastrointestinal neuroses. Wittkower and Spillane report in "The Neuroses in War" on a survey of the German war literature concerning alimentary disorders. According to them, the Germans noted "an increase in dyspepsia under the stress of warfare." Usually, symptoms of such a disorder arose among those persons who had had similar difficulties in peacetime. One half of this German group fell ill before they had been in the front lines, and a further third became ill during the first week of service at the front. "Constipation, gastric hypersecretion, vomiting, diarrhoea and pyloric spasm were commonly seen." Little evidence was presented that this type of dyspepsia led to the production of peptic ulcer. The incidence of peptic ulcer was said to have been no greater during the war than in peacetime, but relapses of peptic ulcer were frequent under the stress of war.

Summary of Recent English and Canadian Reports.—Most of these reports deal with military patients rather than with civilians. However, there are two early papers which give some evidence of the effect of the outbreak of the war on the civilian population. Melton published a paper on the rise in incidence of ulcer complications coincident with the outbreak of the war. In his hospital 38 patients with hematemesis were admitted during the first four months following the declaration of war, as contrasted with 36 patients with the same type of disturbance admitted during the previous eight months. This increase was particularly marked in September 1939. He found that 28 of these 38 patients showed this flare-up of symptoms coincident with the strain of war. A similar report came from the Tavistock Clinic, London, where coincident with the outbreak of war there was a transitory increase in the number of cases of emotional strain expressed in somatic symptomatology and coincident with the beginning of the heavy raids on London in September 1940 there was an increase in the numbers of peptic ulcers encountered and an increase in perforations of old ulcers.

In June 1940 Wilcox reported 41 instances of gastroduodenal disorder among 174 medical patients in a convoy sent back to England from France. This was a percentage of 23.5. He reported gastroduodenal disorders were outclassing all other disease syndromes in incidence rate among military patients. Ulceration was the commonest diagnosis; duodenal ulcers were more common than gastric ulcers, and in most cases the patients had a long history of gastrointestinal symptomatology. Many of the patients classed as having ulcers did not show any organic lesions on roentgen examination. The important factor in causation was considered to be the unsuitable Army diet for men who had had ulcers previously or were susceptible to the development of such lesions.

The next report came from Payne and Newman, who studied a sample made up of 287 dyspeptic soldiers sent back to England from the British Expeditionary Force in France. According to the authors, the patients represented an unselected cross section of the clinical material in military hospitals. The investigators encountered organic disease of the stomach or duodenum in 89 per cent of the patients, and this disease was almost entirely peptic ulcer, especially of the duodenum. In 92 per cent of these patients with organic disease the condition was long standing, with a history of symptoms extending back long before the war period. Functional dyspepsias played a minor role and were represented by only a small group of patients. The men were largely reservists. It was of considerable interest that the age of onset of symptoms was so much earlier than is usually recognized. For instance, 40 per cent of the men had had the first symptoms before the age of 25. The authors attributed the development or the exacerbation of symptoms to the heavy army diet, poor cooking and high incidence of defective teeth (38 per cent). Psychologic factors were found to be of minimal importance, with malingering, exaggeration and pension seeking most infrequent.

This article was rather widely discussed in British medical journals. The *Lancet* presented a leading article in which dyspepsia was cited as the single most prevalent type of disease among military patients. In an editorial in the *British Medical Journal* at about the same time it was reported that 14.4 per cent of all soldiers invalided home had a primary diagnosis of gastrointestinal disease. These figures did not include patients treated abroad. In the same editorial it was stated that recent investigation failed to throw any light on the causation of peptic ulcer but did demonstrate that men with that disorder could not stand up under the stress of army life or make efficient soldiers. The article in the *Lancet* drew a letter from Sir Arthur Hurst, in which he emphasized that delay in proper diagnosis of dyspeptic conditions and disposal of soldiers affected with them would lead to a disorder similar to soldier's heart, or disordered action of the heart, which he would designate as soldier's stomach, or disordered action of the stomach. Hartfall, another gastroenterologist, took strong issue with the statement of Payne and Newman about the low incidence of neurotic patients in the group which they studied. According to his own observations about 60 per cent of dyspeptic patients in the army were fundamentally neurotic, either with the dyspepsia being purely psychogenic or with psychogenic factors being responsible for the persistence of the symptoms beyond the "organic span." In his civilian practice he found that in not more than 1 of 4 patients with gastroduodenal disorders was the condition organic—in the rest it was a gastric neurosis.

Spillane, a neuropsychiatrist, also registered disagreement with Payne and Newman. He observed only 64 instances of peptic ulcer in over 200 cases of chronic dyspepsia encountered during a twelve month period of work in a military hospital. In the great majority of the other cases there was no organic disease, and apparently by implication emotional factors were predominant in the production of symptoms. But in this same period Saffley reported in the *British Journal of Radiology* that in only 38 of 338 cases of dyspepsia among military patients in his hospital was the diagnosis "anxiety neurosis."

The whole subject came up for question in Parliament in February 1941. A government speaker reported that 11.76 per cent of hospital patients invalided from the British Expeditionary Forces had conditions which were given the diagnosis of gastroduodenal disease. Strict instructions had been given to recruiting medical boards regarding the rejection of men with organic dyspepsia.

In March 1941 Graham and Kerr reported an extensive study based on a survey conducted during a fourteen month period in a military hospital. In their opinion peptic ulcer was a major cause of military invalidism. Two hundred and forty-six (31.17 per cent) of 790 patients were admitted to the hospital on account of gastrointestinal complaints. Sixty-four and twenty-three hundredths per cent of these 246 patients showed demonstrable peptic ulcer, and in 85.4 per cent of the patients the ulcers were duodenal. The majority of these patients had disorders representing relapse of a long-standing condition ascribed to the strain of army life. But in the same article another study was reported from a second military hospital, where observations had been made from April to October 1940. It was found that 363 (36 per cent) of 980 medical patients had been admitted for a roentgen examination on account of digestive complaints. In over half the examination failed to reveal any abnormality, and the majority were considered to be suffering from gastritis, with 22 per cent showing an anxiety neurosis. Malingering was rare.

The subject of psychologic factors came up for discussion at a symposium held in March 1941. Tidy reported 15–20 per cent of all medical patients in large military hospitals had dyspepsia and commented on the slight evidence for psychologic disturbance found by recent investigators. In his opinion there was much more likelihood of a psychologic factor being operative among patients with gastritis. In addition, he pointed out, there was much transitory dyspepsia in recruits who were finding adjustment to a new environment difficult. Reassurance and sedation would be all the treatment needed for this type of problem, but he emphasized that if the recruits were not well handled and did find their way into hospitals, their condition could easily become incurable. Tidy stressed the great contrast in the present status of dyspepsia to its rarity as a complaint in the last war. Newman was a participant in this discussion and seemed to have retreated from his former position regarding the lack of psychologic disturbance in this type of disorder. He conceded that psychologic factors did appear to play an important role in causing gastrointestinal disturbance but stated that it was difficult for him to regard worry as a psychologic trauma, since it was the common lot in wartime. He went on to say that he considered sufferers from peptic ulcer as rather abnormal mentally. Scadding reported the presence of an obvious psychologic factor in 14 per cent of his dyspeptic patients without ulcers. Hurst reiterated his earlier remark on the risk of producing chronic invalidism by hospitalization of a dyspeptic person. Hartfall, again, gave his figure of 60 per cent as the frequency of neurotic conditions in dyspeptic patients.

On continuing the survey of the British and Canadian journals one finds many more articles pointing to the importance of the problem and to the controversy over causation, with particular reference to emotional factors. In May 1941 an editorial in the *Canadian Medical Association Journal* reported that 8.5 per cent of men examined for military service suffered from digestive disorders and that this figure was second highest in the list of various causes for rejection. In the British navy Allison and Thomas found the rise in incidence of peptic ulcer disproportionate to the expansion of that service. An anxiety state was a common occurrence among navy personnel suffering from gastroduodenal disorders in wartime. Twenty-three instances were encountered among 100 patients with ulcer. Pallor, malnutrition and anxiety were frequently observed in combination. Ten per cent of the patients suffered from migraine. Thirty-three per cent blamed the navy diet or at least had been on restricted diets before the war. Defective teeth were rarely encountered as important factors. Hurry over meals and excessive consumption of tobacco were commonly observed.

Hutchison reported on a study of 257 cases of gastroduodenal disorder observed at a military hospital with which he was connected. Only 212 cases were fully investigated. Of 88 cases (inpatients), ulcers were demonstrable in 45.5 per cent; in 30 cases the ulcers were duodenal and in 10 they were gastric. In 25 cases (28.4 per cent) the condition was classed as functional dyspepsia. In addition, there were 4 cases of acute gastritis, 2 cases of chronic gastritis and 5 cases of psychoneurosis. In studying 124 cases (outpatients) he found 44 cases (35.5 per cent) of peptic ulcer, 54 cases (43.6 per cent) of functional dyspepsia and 6 cases of psychoneurosis. In 67 cases the ulcers had originated in civil life, as against 17 cases in which symptoms first occurred during army service. In over half (i.e., 44) of the cases of functional dyspepsia the disturbance originated during service. The author commented on the obscurity of origin in all of these cases but expressed the opinion that worry and anxiety represent a potent factor. Anxiety usually arose from concern about domestic and financial matters carried over into service life. In other cases the cause of worry was associated with war experience but not with army routine. In his opinion, anxiety may play an important role in the production of dyspepsia in cases in which the autonomic nervous system is constitutionally precariously balanced. He differentiates this functional dyspepsia and the anxiety present in the great majority of these cases from the pathologic anxiety encountered in a psychoneurosis, which would be crippling enough in itself to lower a person's efficiency. This article appears to have evoked a letter from Gausson and Sutherland, which concluded:

> Functional dyspepsia is a manifestation of an anxiety neurosis since it is a functional nervous condition produced by anxiety—and anxiety neurosis seems to us a preferable term since it indicates the etiology and treatment.

Hinds-Howell submitted a review of patients with dyspepsia admitted to a military hospital from October 1939 to December 1940. Of 9,702 medical patients under observation, 1,270 (13.3 per cent) were considered to have disorders of the stomach or duodenum. Peptic ulcer was present in 52.7 per cent of this group. The history of the ulcer symptoms ranged back five to ten years in the great majority, with symptoms in only 10 per cent of the total number of patients developing in the war period. Among the Canadian patients symptoms developed in 50 per cent after arrival in England, and of these patients, 55 per cent had peptic ulceration. The highest age incidence for the group as a whole was between 20 and 30. In this group of patients neurotic dyspepsia was not particularly common.

Tidy made a report in which he classified the dyspepsia which occurs in the Army as follows: (1) peptic ulcer, roentgen abnormality; (2) gastritis, no roentgen abnormality (functional dyspepsia would be a preferable term), and (3) transient dyspepsia.

He did not include any classification for dyspepsia as a manifestation of well marked psychoneurosis. In dyspeptic patients malingering was rare, but exaggeration of symptoms was common because of overinvestigation and prolonged hospitalization. In large hospitals men with dyspepsia made up 15 to 20 per cent of all medical patients. An analysis of 2,500 consecutive patients with dyspepsia admitted to several hospitals in different parts of England showed 51.9 per cent with peptic ulcer and 35 per cent with gastritis (including transient dyspepsia). Duodenal ulcers and gastric ulcers occurred in a ratio of 3½ to 1. Various studies indicated that in about 90 per cent of the patients the dyspepsia predated army service. This increase in dyspepsia was much to be expected, as gastroduodenal disorders have become much more prevalent in civilian life since the last war, with deaths from peptic ulcer increased severalfold. In Tidy's opinion there was no evidence of an increased incidence as a consequence of war conditions, but induction of large numbers of men into service revealed an unsuspected frequency of peptic ulcer and gastritis in civil life before the war commenced and demonstrated that organic dyspepsia was incompatible with army life. Men with such disorders could not stand the army diet and cooking. Psychologic factors played a role, and some patients approached the borderline of a definite psychoneurosis, but Tidy did not consider psychologic factors as primary even in functional dyspepsias, and he expressed the belief that psychiatric treatment would not effect a cure. Men with transient dyspepsia appeared more frequently on sick-call than those with all other types, but they were soon acclimatized if the importance of their symptoms was not too much emphasized—and if they were given sufficient reassurance.

Another important study was that reported by Urquhart, Singleton and Feasby, of the 15th Canadian General Hospital, in England. It covered the period from July 1, 1940 to June 30, 1941, during which time the hospital staff dealt with 10,165 indoor and 15,631 outdoor patients. One thousand and thirty-five, or about 4 per cent of all patients, were referred for symptoms relating to the upper portion of the gastro-intestinal tract. There seems some confusion about these figures, as the author stated:

> The relative importance of this group as a medical problem is shown by the fact that it accounted for approximately one-third of the outdoor medical cases, and one-fifth of the general medical beds in this period.

Of 839 soldiers returned to Canada for medical reasons, 21 per cent were invalided because of peptic ulcer. It is puzzling that of 377 patients with definite organic disease in the series of 1,037 patients with gastro-duodenal disorder, 96 per cent suffered from duodenal ulcers, while only 4 per cent had gastric ulcers. Of the remaining 603 patients, in whom there was no evidence of organic disease, 17 were considered neurotic, 3 were malingerers and the other 583 were considered to have functional dyspepsia, with this term used to indicate such digestive disorders as acute and chronic gastritis, duodenitis, gaseous dyspepsia and indigestion. Most of these patients with functional dyspepsia were returned to their units, and the majority of them were able to continue on duty.

Another important article appeared in the *Lancet* for Jan. 10, 1942. This article was written by Col. William Brockbank, and it may be discussed most easily by including the subsequent correspondence which it provoked. Maingot brought up the disparity between the figures for gastric and for duodenal ulcer reported by Urquhart, Singleton and Feasby for Canadian soldiers and those reported by Brockbank for English soldiers—96 per cent of the proved ulcers in the Canadian group were duodenal, while 28.6 per cent of the total number of proved ulcers reported by Brockbank involved the stomach. Maingot also commented on figures cited in these two articles for the number of men invalided from the army for peptic ulcer and for chronic gastritis. Seventeen and two-tenths per cent of the men discharged by one medical board and cited by Brockbank were dismissed because of peptic ulcer or chronic gastritis. The Canadian figures were 21 per cent for peptic ulcer alone. Maingot brought to question the various writers who claimed that in the vast majority of cases dyspepsia originated in civil life. He noted only a slight increase in the number of admissions for dyspepsia to his hospital during the past year and stated this was the experience at other general hospitals in spite of an elimination from the army and return to civil life of chronically dyspeptic men among reservists and elderly soldiers. In his opinion it was too early to state there was no increase in incidence on account of the war. In some districts, presumably ones more exposed to bombing, the number of perforations treated yearly was increasing and the number of dyspeptic persons requiring treatment was on the upgrade in outpatient departments. Maingot was critical of the lack of facilities for treating those men who were discharged on account of this type of disability, and he was even more critical that facilities for treatment were not available for those men of specialist rank who wished to remain in the service in spite of their illness. For this group of men, treatment should be available, so that they could adjust themselves and render good service just as it is possible for such sufferers in civil life.

A caustic commentary on Brockbank's article came from Bull, who stated that in peacetime medical and surgical writers on the treatment of ulcer claimed cures for approximately 75 per cent of the total number of patients. But in wartime these 75 per cent were discharged as permanently unfit for military service. In his opinion, there should be some censorship of medical literature if the peacetime figures were incorrect or else the army was making a bad job of the treatment of dyspeptic persons.

Another English report which appeared in February 1942 was that of Stewart and Winser, who analyzed the figures for the incidence of perforated peptic ulcer as reported by sixteen London hospitals during 1937–1940. They were able to show a significant statistical increase in incidence during the first two months of heavy air raids (September and October 1940). They considered the probable cause for this increase to be anxiety. Ninety-three per cent of the perforations during this four year period occurred in men. The ratio of gastric to duodenal perforations was 1.6:1. The peak of incidence was in the age group 50 to 60, and this is contrasted to the peak occurring in the age group 20 to 40, as reported by other authors. There was no significant change in age, sex or site of perforations among patients encountered during the air raid period.

The medical statistical officer of the General Register Office reported an increase in deaths from peptic ulcer during the second year of the war, 28 per cent for men and 22 per cent for women.

The latest English report comes from Smellie who made a survey of 1,686 patients admitted to the medical division of his hospital from Nov. 1, 1940 to Oct. 31, 1941. These patients were not selected, and the proportion of those with dyspepsia was much lower than in some of the earlier studies, i.e., indigestion of one type or another was a leading complaint in 14 per cent. Of this number, 53 per cent were found to be suffering from a definite organic gastric or duodenal lesion and were discharged as permanently unfit. The remainder were returned to duty after a short course of treatment. In Smellie's opinion this drop in incidence is related to a more careful sorting by medical boards, the earlier invaliding out of men least fit from this point of view and an improvement in army cooking. The writer commented on the infrequency of malingering and also stated: "The number of cases in which there appears any material degree of neurosis is negligible." He commonly encountered exaggeration of symptoms, however, and said: "I am unable to appreciate the finer distinctions between an exaggeration and a neurosis."

Comment

It would appear that British authors have considerable justification for saying that dyspepsia is the major medical problem of this war and that this is in remarkable contrast to the situation in 1914–1918. It is obvious from the conflicting figures that it is difficult to evaluate just how great a problem it is and how the contrast should be explained. Apparently reliable figures were submitted which would suggest that the conditions of about 15 to 20 per cent of all medical patients fall into this category. The highest figure cited was that of Graham and Kerr, who reported that 36 per cent of the patients in one large general military hospital were suffering from dyspepsias of various types. The low figure of 4 per cent was reported by Canadian authors after a survey of over 25,000 indoor and outdoor patients, but their figures are confusing, as they stated dyspepsia accounted for one third of the outdoor medical patients and one fifth of the general medical patients. For the number of instances of organic disease (almost entirely peptic ulcer) among the dyspeptic patients one finds the highest, 89 per cent, reported by Payne and Newman. The figure would appear to be based on soldiers evacuated from France, presumably highly selected material, so that the more severe and exactly diagnosed conditions would be represented in disproportionate degree as contrasted with other studies. The lowest figure also was reported by the Canadian authors, 21 per cent. This may not be altogether accurate, as it is possible not all the dyspeptic soldiers were evacuated to Canada. Probably Tidy's figure of 51.9 per cent is the fairest, as it is based on reports from several hospitals and a large number of cases.

There appears to be an active controversy regarding causation and the reasons for the rise in incidence. Many writers expressed bafflement and surprise. It was known that there was an increase in the frequency of peptic ulcer in England, but they were not prepared to find so many men with histories of ulcer turning up among the troops, so many men suffering relapses under the stress of army life and the occurrence of ulcer in such a youthful group. The heavy army diet and poor cooking were advanced as explanations, but while these are undoubtedly factors, they hardly seem sufficient to explain the marked contrast between the incidence in the last war and that in the present war. Some of the writers attributed the frequency of this problem to dental defect, but one may cite the other studies which would show this to be of no unusual degree and certainly no more frequent a finding in British soldiers than was true twenty-five years ago. Such authorities as Payne and Newman have been cited earlier regarding the low incidence of neurotic disorder among dyspeptic patients. In one report they placed the incidence as low as 3 per cent. This would seem to be absurdly low. In a later comment Newman hedged a great deal on this earlier estimate. Other writers found this factor of importance depending on their orientation, with a roentgenologist reporting 11.53 per cent, a psychiatrist suggesting a high figure of 68 per cent and gastroenterologists making either some general comments regarding the importance of anxiety or giving such a figure as that of Hartfall, who reported 60 per cent. Alvarez and other American writers on gastroenterology have repeatedly stressed the tendency on the part of a busy practitioner to confine his questioning to his own special interest or to a patient's specific complaint, with the consequent neglect of any investigation of the person's total personality and problems. This would seem to be a possible source for the wide discrepancy in the reports from England regarding the emotional impact of war experiences in producing or reactivating dyspepsia and particularly ulcers.

The importance of emotional factors has been increasingly stressed in the American literature with consideration of dyspepsias, and particularly ulcers, as a psychosomatic problem. Recent reviews by Jones and his colleagues and by Brush furnished evidence regarding the general agreement among gastroenterologists for "the importance of the psyche in its influence on the digestive tract." Recent papers by Alvarez, Cannon, Crile, Draper and Touraine, Gerendeasy, Moschcowitz, Palmer, Robinson, Sanders and Smithies, along with many others, reenforced this evidence. Agreement is truly widespread concerning the importance of constitutional and environmental factors in the production of peptic ulcers and dyspepsia in general. An interesting English article by Davies and Wilson presented a study of over 200 patients with ulcer in whom it was established that some 84 per cent showed well marked personality disorders. In another article the same authors reported on a study of 75 patients in whom hematemesis and perforation developed. In 63 of these patients they found unusual emotional tension was present for some days before these critical developments. This tension was generated by such matters as an increase of responsibility, financial reverses and illness or trouble in a family situation.

An important recent report by Mittelmann, Wolff and Scharf offered convincing evidence for the role of emotional factors in the causation of peptic ulcer and gastritis. This is not to say that the emotional factors are the only important ones or that every dyspeptic patient needs psychiatric treatment. But the emotional factors do appear to be of fundamental significance in the great majority of cases, and all should be studied with this possibility in mind.

With this orientation one cannot but conclude that the greater number of cases of dyspepsia in England must be related to emotional factors growing out of the war situation and that with the remarkable decline in the type of neurotic manifestations so frequent in the last war, i.e., anxiety states and conversion hysteria, the emotional tensions generated in this war are appearing as psychosomatic disorders. Kennedy made the following comment:

> We know in civil life that peptic and duodenal ulcers come as a result of prolonged emotional strain. It is so also in war. Bombing makes for unpunctuality in meals, as well as uncertainty of survival. This dual irregularity has made a great increase in England, among soldiers and civilians, of gastric and duodenal ulcer.

The frequency in the British army may be related to a careless sorting of recruits, so that men were admitted of a markedly neurotic personality structure or with histories of ulcer. Another contributory factor may arise from the prolonged tension present in men who are mobilized for war but who have little opportunity to carry off their emotions in combatant activity. In the last war one of the few reports regarding the occurrence of gastrointestinal disorders among troops came out of Switzerland, where men were held mobilized but inactive for long periods. In a recent article Schindler pointed out the possibility that chronic intestinal disease would be an important problem in stationary warfare. In his opinion gastroduodenal ulcer will be a common disease in the United States Army. He cited an interesting article by Mahlo, who reported that during the Polish campaign German soldiers suffering from gastroduodenal ulcer lost their symptoms, only to have them reappear when they were transferred to France and the relative inactivity of acting as occupation troops exposed to the silent hostility of the population. This state of unresolved tension would seem to be the emotional situation in England today. There has been much stress recently on the importance of such emotional reactions as frustration and inadequately expressed resentment in engendering dyspepsia and reactivating ulcers.

Certainly, one could find no more frustrating or resentment-breeding situation than to take bombing night after night without being able to hit back effectively. This attitude of frustration and resentment seems to be a rather well established emotional pattern in many of the cases of gastroduodenal disorder that have been studied in this country.

One is struck by the similarity of the situation in regard to dyspepsia to that concerning effort syndrome during the last war. It was only in 1917 that an American commission in England demonstrated the regularity with which a psychiatric family history or a neurotic predisposition could be found in those patients who had earlier been regarded as breaking down under the physical stress and strain of warfare. Even then, there is little evidence that the British attempted much in the way of a psychosomatic approach to the problem, and they ended that war with some 70,000 soldiers with effort syndrome, all of whom remained pensioners, and by implication, in a chronic invalid state. The American Army took advantage of this study and avoided this heavy drain of casualties and pension burdens. The British appear to be struggling with this present-day manifestation of a pyschosomatic disorder much as they did in the first two years of the last war, even though they learned to eliminate recruits with potentialities for effort syndrome and to deal with patients with this disorder on a more effective basis if the syndrome developed during service.

It is rather difficult to break down the figures for the frequency of gastroduodenal disorders in the American Army. The incidence among selectees of defects which involve the abdominal viscera is given as 12.2 per thousand men examined. This would probably be the classification nearest to the gastroduodenal disorders discussed previously. It was a case for rejection which was low on the list. According to the last report of the Surgeon General of the Army "Diseases of the respiratory tract were responsible for the largest number of admissions. In second place, however, were infectious diseases and conditions of the digestive system." In the annual report of the Surgeon General one finds the rate of admission to "sick report" for diseases of the digestive system was 137.0 per thousand admissions in 1940 as compared with 102.8 per thousand in 1939. The rate is higher than the average for the preceding five year period, which was 121.7 per thousand. These figures must be somewhat qualified, as the category apparently includes acute tonsillitis and acute pharyngitis, with these two diseases accounting for 36 per cent of the admissions classified as diseases of the digestive system. According to this report, diseases of the digestive system were responsible for 17.9 per cent of all admissions, 7.1 per cent of all deaths and 14.4 per cent of total ineffectiveness. Ulcer of the duodenum disappeared entirely, however, as a cause of admission, but acute gastritis and enteritis climbed to second place among the twelve leading causes for admission among diseases of the digestive system.

It would appear that there is no striking increase in the prevalence of digestive disorders among American troops—and certainly no striking incidence of gastroduodenal disease to compare with the English figures. But with the need for more men, with the tendency to lower the standards of examination by local selective service boards that has been present since January 1942 and the possibilities for combat which now exist—particularly if it occurs under such conditions of warfare as have been present in England—one must be very much aware of this type of disorder as an important medical problem among the troops. Careful consideration must be given before admitting any recruit with a history of peptic ulceration. In addition, large numbers of military patients with dyspepsia will come from the psychoneurotic group as it is generally defined, and the elimination of men in this group will play as important a role in cutting the incidence of gastroduodenal disorder as it did in reducing the problem of neurocirculatory asthenia in the last war.

One may expect that these patients with gastroduodenal disorder will be found chiefly among two types of personality. One group will be made up of highly responsible, ambitious, driving men who have a strong desire to enter their services but will be inclined to worry about their home responsibilities. The other group will consist of men of a somewhat hysterical personality structure who are strongly attached to their families and are often characterized as "mamma's boys."

The following cases illustrate the types.

Report of Five Cases

Case 1.—This person became known to me when we were enlisted men in the same regiment during the last war and while we were in service in the United States and in France. His condition would appear to have been representative of the transitory dyspepsia of which Tidy spoke. The patient was a somewhat tense and sensitive man with a highly developed sense of responsibility, who rapidly qualified as a noncommissioned officer. He turned up regularly on sick call with some minor gastrointestinal complaints, particularly of gaseous eructations in the first weeks that he joined the regiment. The medical officer carried him along by reassurance and mild sedation. He tended to appear on sick call when we were all under some stress, such as traveling in convoy to France and, later, nearing the front. But the medical officer was consistently patient with him, and he was never hospitalized and never considered neurotic or particularly ill by his fellow soldiers. Some twelve years after the war he communicated with me, saying that he had been having a hard time financially, a gastric ulcer had developed; and he would appreciate an affidavit regarding his frequent appearance on sick reports, so that he could establish the ulcer as service attached.

Case 2.—An example may be cited from the last war of a person who was not in the armed forces but who was exposed to somewhat similar stresses in war work and who followed a course which can be considered fairly typical. He probably would have made a poor adjustment to Army life in his earlier state and only a shaky one after psychiatric treatment, even though this did enable him to do somewhat better in civilian life.

This man was a white, single automobile mechanic aged 32. He was referred to a psychiatric clinic from a general medical clinic with a history of stomach trouble that had been present for approximately fourteen years. This disturbance consisted of gaseous belching, vomiting and discomfort after meals.

The patient was born in the United States, the fourth of 6 children. His father was a steady, hard working man—"not like myself," the patient said. His mother was much attached to the patient and was oversolicitous about him. His siblings have all done fairly well in life and have married and established homes. The patient stated that he had not showed any neurotic characteristics in childhood. He left school at 14, loafed for a time and shipped as a sailor for one trip. Later he worked irregularly as a tinsmith, a garage mechanic and a chauffeur. He held a great variety of jobs but never worked at any for long. Often he was dependent or semidependent on his parents or siblings. He never married because he "never got around to it."

At about 18 (1918) he had his first gastrointestinal symptoms, of the type just described. His family physician believed he was suffering from chronic appendicitis, and his appendix was removed. No report of the operation was available. The symptoms were unaffected except for a gradual increase in severity. There were periods when he vomited after practically every meal, but he never lost an appreciable amount of weight. At about 22 he began his attendance at medical clinics. In the first clinic he was treated for three years, with no particular effect on the symptoms. At 25 he shifted to a new clinic. Here he complained of heartburn relieved by food, of vomiting after each meal and of persistent belching. At times, he said, he had pain in the epigastrium, coming on about fifteen minutes after meals. His bowels were regular. Physical examination revealed nothing striking. The first impression was gastric ulcer, but a series of gastrointestinal roentgenograms showed essentially nothing except visceroptosis. During the next seven years he was in and out of that clinic, with practically the same complaints. He was treated with a bland diet, alkalis, bromides, etc. Repeated roentgen study of the gastrointestinal tract revealed nothing essentially abnormal. On April 1, 1931 he was still bringing up mouthfuls of food after every meal and occasionally the entire meal. At this time his physician noted: "'We have been unable to find any organic basis for the patient's symptoms. We believe they have a neurogenic basis. Advise treatment by a psychiatrist.'"

When he came to the psychiatric outpatient department, he gave the impression of being rather dull and placid; he did not show any fundamental concern about his symptoms and accepted them overeasily. After one or two visits, the rapport was much improved and the appearance of dulness was not so marked. He was asked to recall, if possible, the first occasion on which he had any gastric symptoms. He stated that in 1918 he was employed in the shipyards. He and another man were working in the double bottom of an old oil boat. The patient was suffering some anxiety in his work because of a fear that he might be overcome by oil fumes. However, he stuck at his job and was doing well. Just before going to lunch one day the other man made a serious mistake in their work. When they returned from lunch they found the boat about to founder. The patient became excessively upset, cried and vomited his lunch. He dated the development of his symptoms from this time.

At the conclusion of the interview in which the aforementioned story was obtained the patient came back into the office just after leaving. With much belching and considerable emotion he said that the men at the garage where he worked twitted him about his lack of success with women. He asked to be allowed to discuss that question at his next visit. At that time he discussed his great conflict over sex. Again the interview was punctuated by profound belching. He said he had been worried about this question ever since adolescence. Simple explanation and reassurance gave him relief. After this the opportunity was taken to give him reassurance regarding his gastrointestinal symptoms. He saw the connection between his fears and conflict and the symptoms. Gradually he was able to eat more boldly and after about six weeks gave up medication for the first time in many years. He was working regularly. At the end of a six month period he was still doing well. He was followed at long intervals for some five years and made only rare visits to the clinic and then only when under stress.

In this case no definite physical signs were found. The story of the onset was linked with an emotional situation but not by the patient until the history was elicited of the setting in which those symptoms first occurred. He came to see that his anxiety about his sexual situation served to make the symptoms persist. His willingness to accept a role of dependence and invalidism is striking. His attitude toward the symptoms was one of indifference. His persistent visits to clinics fitted in well to the pattern of wanting to be cared for and mothered. The illness seems to have served, at least to some degree, that purpose.

Case 3.—This man was the type of person, highly conscientious and responsible, who would attempt to meet stresses in spite of his anxiety and tension. For a person of this type military service in wartime would be considered a duty and an obligation, so that he might well conceal prior symptoms and go on to breakdown after induction, particularly with his tendency to worry about his family's welfare.

This patient was a married salesman of 33, admitted to the psychiatric outpatient department with complaints of soreness in the upper portion of the abdomen; much gaseous belching; shooting pains in the abdomen, chest, knees and arms; nervousness, and a general let-down feeling of twelve months' duration. His appetite was fairly good. There was much of the soreness over the abdomen after meals. When tired after work he was badly nauseated but did not vomit. His bowels were regular. He was losing weight slowly. He smoked a pack of cigarets a day and did not take any alcohol.

The general physical examination revealed nothing abnormal. There was slight epigastric tenderness on palpation. Gastric analysis was done on 10 cc. of coffee ground gastric juice, with a total acid content of 25, free hydrochloric acid content of 10 and a positive reaction (3 plus) for occult blood. Fluoroscopy of the stomach and duodenum failed to give evidence of organic disease. The patient was referred to a neuropsychiatrist.

He gave his story frankly. He was born in England, the oldest child in a family of 12. The family was poor, and he was early impressed with his responsibilities in contributing to their support. He stated that he had always been of a nervous temperament. Whenever he was frightened, "It always hit me in the stomach." He went to sea at the age of 16, during the third year of the last war. His ship was torpedoed and sunk. For some time after this experience he was tense and nervous—somewhat as he was at the time of the examination. Nevertheless, he signed up on another ship and while on this service was subject to night terrors.

He came to this country after the war and won moderate success as a salesman. Things went well enough for him, so that he married and was happy with his wife and his two children. But beginning with the economic depression in 1929 he ran into financial difficulties, and when a third child was born, the whole situation became increasingly reminiscent of his earlier life. Anxiety set in, with gastrointestinal symptoms as a physical component, and this anxiety was considerably exacerbated by unhygienic contraceptive methods. When his wife conceived again in spite of the contraceptive efforts, they both became "nervous." Finances were even worse, and he feared they would lose their home. As the patient's anxiety mounted, his abilities as a salesman declined, just when it was most necessary that he be at the peak of efficiency, and symptoms began to develop in sufficient severity to bring him to the clinic.

The patient appeared to be fundamentally tense and prone to "nervous" reaction. His situation precipitated the symptoms. After being given an opportunity to ventilate his anxiety, much reassurance coupled with measures designed to promote more rest and medication with alkaline powders, the patient began to improve.

Case 4.—This patient would not seem a good candidate for military service, as his separation from his family and his inability to make an allotment greater than that possible for an enlisted man would provoke a prompt reactivation of his basic conflict and his symptoms of ulcer. On the other hand, such a patient might make a good contribution in a defense industry and hold without difficulty his present level of stabilization.

The patient was an elevator operator aged 32 who presented himself to the clinic with a complaint of burning abdominal pains of seven months' duration coming on most often when he lay on his back—more occasionally about an hour after meals—and relieved by lying on his face or by taking food or bicarbonate of soda. At the time of his first visit he volunteered that he was so worried about family affairs that he had been contemplating suicide.

The general physical examination revealed nothing essentially abnormal. He showed an ulcer habitus. There was slight tenderness on pressure in the right upper quadrant of the abdomen. Roentgenograms of the stomach and duodenum showed a normal stomach. The cap filled poorly in all roentgenograms. Reexamination was advised, as the impression was postpyloric ulcer. The cap was still defective on reexamination and the impression was substantiated.

A psychiatric consultation was requested because it was felt that "the patient's gastrointestinal condition will not regress while he remains in his present worried state." At the time of this consultation the patient complained of a quick temper displayed in tantrums, with much worry over family matters.

He stated that he was the oldest of 3 boys. His father was a robust, vigorous person with a choleric bullying temperament, who would smash dishes and furniture in his rages. The patient throughout boyhood took his mother's part in violent conflicts between his parents and vowed he would take his mother away and make a home for her himself. He finished high school and learned photography as his trade. After a particularly violent quarrel, in which his father "beat up" his mother and the patient "beat up" his father in retaliation, he left home to make his fortune in this country. At first he was successful and happy and enjoyed life. He was able to send some money to his mother. But four years prior to admission to the clinic the economic depression threw him out of his regular job, and he had worked since as an elevator operator. About eight or nine months before the consultation he had met a girl with whom he fell in love. Five months before admission he had married her and professed to be happy with her. But the marriage on his inadequate earnings had presented a conflict, as he could no longer send money to his mother. This conflict was much sharpened when his mother wrote that his father was no longer contributing to her support and was running around with other women. The patient wept as he told all of this worry about her and of how all his troubles would be over if he could only bring her here to this country. He could enjoy nothing without her, and his temper was beginning to alienate his wife. The suicidal ideas had been expressed after a sharp quarrel with his wife. After expressing all of this conflict and receiving sympathetic understanding and reassurance, the patient felt much better and was much more cooperative in keeping to his dietary restrictions. He discussed his mother's problems with more common sense and insight—realizing her pathetic letters were in the nature of an outlet, just as his consultations had been. Actually, after a brief contact with a neuropsychiatrist he was able to rationalize the situation, so that he made rapid progress medically. He has been followed by the clinic, at increasingly long intervals, for some eight years and has had no recurrence of activity of the ulcer. He is frequently in need of reassurance—occasionally, there is a recurrence of pain, "usually initiated by mental distress."

Case 5.—The patient had a neurotic personality but had made a good adjustment prior to induction. His close tie to his family, and particularly to his mother, is worthy of note as it is apparently a common occurrence among men who cannot adjust to Army or Navy life. In view of this man's subsequent history it appears to have been an important factor in making his Army life one of invalidism.

The patient was a 35 year old Italian-American who was discharged from the Army just prior to his first visit to the clinic. He had spent nine months in the Army, nearly all of this time in the hospital, and had been discharged on a disability certificate because of a psychoneurosis. He gave as his chief complaint "pains in the stomach" over a five year period.

The patient came from a family constellation rather similar to that in case 4. His father was an irritable and unstable person who gambled away most of his earnings and who often beat his wife and his two sons. He suffered from gastric ulcer. The patient was devoted to his mother and protective of her against his father's abuse and because of her deafness. The patient's younger brother was rather shiftless, much like his father in temperament and had once stabbed the patient in a rage.

The patient was a steady worker who took great pride in the trust and confidence his employers conferred on him. He was the mainstay of the family and the chief financial and emotional support of his mother. His entire devotion was given to her, and he was extremely shy with girls—never having kissed one in his life. He had always been somewhat worried about his health from childhood, when he had had "terrible heart attacks" in school, but his anxiety was never sufficiently incapacitating to interfere with his employment.

At about the time of his induction into the Army, in January 1941, his father left home for the last time, and the patient was greatly troubled about leaving his mother and being able to do so little for her financially. The result of a Wassermann test of the blood made by his local draft board was positive, and this added tremendously to his anxiety. He was given one intravenous injection and two gluteal injections presumably of an antisyphilitic preparation before induction. No history of his stay in the Army hospital was available, except what he himself gave. According to his statement, he was admitted to the hospital almost immediately after induction because of the severe pain in his abdomen and vomiting. During his stay in the hospital he claims to have had repeated negative Wassermann reactions of blood and of spinal fluid. His syphilophobia appears to have been marked. He stated that he had spent nearly the whole nine months of his Army service in bed. When ordered up at one point, he had to return to his bed after three days because of violent pain and vomiting. From his discharge slip one may assume these symptoms to have been on a functional basis.

After discharge the patient did not work for two months prior to his admission to the clinic. He was taking an alkaline preparation for the stomach pains. While feeling better and wanting to go back to work, he was hesitant to apply because of his disability.

After his first visit, in which he had been given a good deal of explanation and reassurance, the patient made one subsequent visit two weeks later. During this period he had occupied himself chopping wood on the farm and returned feeling much more cheerful, healthy and voluble. He expressed a hope of getting a job in a nearby munitions factory on the basis of his excellent references; he was looking forward to this and to being able to earn some money. The patient expressed much confidence regarding his prospects and ability to work. He stated that he had no worry about his "ulcer" and had had to take alkaline powder only once; he asserted that he felt sure that if he were working again he would forget about his ailments, as that had always been true in the past.

He considered his chief source of conflict to have been his great concern about his mother and felt this would now be solved. The patient did not feel any need to return for further visits but promised to communicate with the clinic if he again became upset. He appeared when last seen to be making a good readjustment in his community, with the possibility of making a contribution in war industry.

SUMMARY

1. In marked contrast to its significance in the war of 1914–1918, British authorities stated, gastroduodenal disorder is the most important medical problem of this war and the single most prevalent type of disease among military patients.

2. In over 50 per cent of cases this disorder is said to be due to peptic ulceration.

3. An active controversy exists regarding causation and in particular regarding the significance of the emotional stress of warfare.

4. The British attitude toward the importance of emotional factors is rather similar to that which was present regarding such factors in relation to neurocirculatory asthenia (in the war years prior to 1917).

5. The frequency of gastroduodenal disorder appears to be related to inadequate screening of recruits with a history of ulcer or with a markedly neurotic personality structure. Other contributory factors may be prolonged tension in men mobilized for war and exposed to hostile action but with little opportunity in combatant activity.

6. The potentialities for the development of a similar medical problem in the armed forces of the United States are discussed briefly.

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THE NEUROSES OF WAR*

by

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The first thing that I usually want to know about an author is the experience on which his observations and opinions are based. I shall therefore hasten to say that, unlike most of the authors whose papers are included in this symposium, I have had no experience with the acute forms of the war neuroses. All those that I have encountered, between the years 1922 and 1925, were observed in connection with my work in a therapeutic clinic at a government hospital where I was studying and trying to cure the chronic forms of war neuroses. During this time I saw upward of 1,000 patients with neurotic disturbances connected with the war. Of this number, about 700 had traumatic neuroses, and of the 700 I attempted to treat about 150. About 50 of these I treated intensively for periods varying from several months to two years.

This experience was at once the most instructive and the most dramatic of my career as a psychiatrist. Physicians who merely read descriptions of these neuroses can form no opinion about the extent to which the lives of the patients are disrupted, the suffering that the neuroses entail and the slight relief which can be obtained. I regard the traumatic neurosis as one of the most serious challenges to psychiatry today. Its importance becomes known to the general public only during war; nevertheless, it is an endemic problem which is just as important in time of peace as in time of war.

First, there is no such thing as a war neurosis, that is, a specific neurosis created exclusively by the particular conditions of warfare. No psychiatric symptom complex is observed in war which does not occur in peace. The only influence that war has is that it offers opportunities for the development of neuroses in much greater concentration and frequency than do the conditions of peace. It may also be that the course of the neurotic or psychotic disturbance precipitated during war may in a measure be influenced by the conditions that prevail at the time. This is notably the case

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with many of the mild psychotic disorders which occur during war but are transient and disappear after a variable time. The transient schizophrenias and hypomanic states belong to this category.

But by far the most frequent and important symptom complex which occurs during war is the traumatic neurosis. It overshadows all others in importance because of its frequency, because of the poor methods extant for diagnosis and treatment, because of the errors that have been made in the past in dealing with it and because of the complicated forensic problems consequent on it. In addition to all these, it creates one problem in which many physicians will have to be immediately concerned; that is, a problem of military discipline. Therefore, when I speak of war neurosis, I mean predominantly that type which is called traumatic neurosis.

In the present stage of national preparation the problem is whether or not the Army can learn from past experience to rule out those candidates for service in whom traumatic neuroses are likely to develop under the conditions of war. Though I have seen many hundreds of the chronic forms of these neuroses and have studied the psychopathologic picture, course, treatment and previous personality in many cases, I should hesitate to offer any criteria that can be used to predict that a given candidate will have a traumatic neurosis. However, although there are no certain criteria, there are a few which can be used with some confidence. Stammerers, tiqueurs and persons who give a history of convulsive phenomena at some time in their life are likely candidates for traumatic neuroses. In addition to these, there are the persons who are "fainty"; those who cannot stand the sight of blood; those who have no tolerance for physical pain; those who have a low cardiac reserve, and, finally, those with certain chronic forms of disturbance of the autonomic nervous system, such as gastric ulcer and mucous colitis. However, with the last-mentioned group I should give the candidate the benefit of the doubt and decide on his fitness after he is inducted into service and has been observed in training. The first group—the stammerers, tiqueurs and persons who have had convulsions—can be ruled out of first line duty and relegated to such duties as do not expose them either to great physical strain or to emergency. They are not equal to it, and the advantage of ruling them out to start with is that they will not make trouble for their comrades later. I set only a slight value on these criteria, for any one may have a traumatic neurosis. In fact, I should go even further and say that every one exposed to war has a mild form of traumatic neurosis, which, however, may not become stabilized, so that the patient may not organize a new adaptation on the basis of this transitory reaction. I have often observed the most severe types of traumatic neuroses in soldiers with none of the aforementioned stigmas, soldiers who had great powers of endurance and who distinguished themselves in service as the bravest of men.

Closely related to this question is the question whether an existing psychoneurosis of the usual type, hysteria or compulsion neurosis, is a contraindication to military service. And the answer to this is decidedly that it is not. I have seen many severely neurotic persons who were most uncomfortable and maladjusted in their premilitary life who accommodated themselves excellently to the military routine and who lost all their neurotic symptoms—for the time being, at any rate. The reasons for this are not hard to find. The dangers and hardships of the military life are in a large measure exaggerated in the popular mind. Physically the soldier leads a carefree life, totally free of responsibilities for his maintenance, comfort and entertainment. The hardships and routine of drilling and active service are sporadic and not continuous, and I have never seen a veteran whose neurosis in any way was ever traceable to the continuous strains under which he lived as a soldier. I have seen many persons with hysteria or compulsion neuroses return to civilian life from distinguished careers as soldiers only to have recurrence of the worst symptoms that they showed before going into service. There is one exception, however, to this statement. Persons with a history of schizoid traits or manic episodes should not be inducted into active service.

Therefore, with regard to predisposition to neurosis and fitness for service, I should rule out positively only men with a history of convulsions, tiqueurs, stammerers and men who have shown persistent disturbances of the autonomic nervous system over a long period. These, however, can be inducted and assigned to noncombatant duties.

As regards the traumatic neuroses proper, the symptoms present an extremely varied picture. One of the chief difficulties encountered in the last war was that, owing to this variety of the clinical manifestations, vast numbers of these conditions were not recognized as traumatic neuroses but as a general rule found their way into medical categories. The symptoms fall into four main clinical groups: (1) defensive tics and ceremonials; (2) disturbances of the autonomic nervous system; (3) sensory-motor phenomena, and (4) syncopal or epileptiform phenomena. Of these, the defensive rituals are the most circumscribed and the most highly organized. The defensive ritual usually consists of some spasmodic gesture, ticlike movement or more complicated ritual which when studied proves to be a motion, gesture or action which would have spared the patient the traumatic experience had it been done at the time of the trauma. Thus, a soldier had a sleep ritual of sleeping in a prone position with his hands over his head. This on examination proved to be a gesture of adjusting a gas mask which had been dislocated during a gas attack, as a result of which the man lost consciousness and later acquired his symptoms. The disturbances of the autonomic nervous system are the most complicated and varied. Every known combination of disturbances, from tachycardia to exophthalmic goiter, all varieties of spasmodic phenomena and all kinds of disturbances of smooth muscle and of the secretory apparatus can be noted.

The sensory-motor disturbances also embrace every possible combination—tremors and paralyses may occur on one side or in one limb only; partial paralysis or complete paralysis may occur, all these symptoms following one another in unpredictable succession.

Perhaps the most interesting cases are those characterized by syncopal phenomena. It is now twenty-two years since hostilities have ceased, and there are still thousands of persons who are going about with recurrent syncopal phenomena resulting from experiences in 1917 and 1918. This fact is testimony to the chronicity of this particular symptom complex. I hope to demonstrate that notwithstanding the severity of these symptoms many of them are capable not only of improvement but of permanent cure. The syncopal phenomena vary from vertiginous attacks, with or without loss of consciousness, to epileptic seizures which cannot be differentiated from essential epilepsy. They are associated with auras which initiate the attacks, but they are distinct from the true epilepsies on observation because the convulsive phenomena are not myoclonic but highly coordinated activities.

One might ask whether all these four varieties of symptoms can be rightly called traumatic neuroses, since they differ so widely. It all depends on what standards are set up for a neurosis. The fact is that, irrespective of the nature of the presenting symptoms, all varieties of traumatic neuroses have certain common features, and it is on these features that the syndrome is established. The symptoms are merely surface manifestations of a deep-seated alteration in adaptation and these common traits, which I shall presently mention, represent the disturbance more accurately than do the presenting symptoms. The common features are (1) a highly characteristic dream life; (2) certain constant inhibitory phenomena; (3) acoustic hypersensitivity; (4) irritability, and (5) a tendency to outbursts of aggression. These characteristics may be called secondary character changes consequent on the neuroses. It is these secondary character changes which indicate that the psychologic processes are the same in all cases, irrespective of the presenting symptoms.

It would take a longer time than I have at my disposal to describe the pathologic picture and the principles on which the symptoms are based. Only the presentation of a general idea is attempted here. Notwithstanding the great variety of the symptoms, the pathologic picture depends on a principle which is so common that any one can recognize its operation in his own life. The basic principle is this: An activity which fails or causes pain tends to become inhibited. This is such a widespread reaction in all nature that one can say with certainty that without the capacity for inhibition no adaptation could be established and no integrations could be permanent or serviceable, because inhibition introduces an element of selectivity and discrimination. I am sure that most persons have had some experience that will back up this general conclusion. Some have almost been drowned and have had a distaste for swimming for a long time thereafter. Many have fallen from horses and have acquired a distaste for horseback riding. Not all persons have such inhibitions, but a very large number do. In cases of traumatic neurosis this principle operates on such a vast scale and attacks such indispensable weapons of adaptation that the phenomena produced do not allow one at once to see the operation of this basic principle. What one really observes in the symptoms is not this general principle but the effects of its operation on the adaptation of the patient. Inhibitions do not make any noise. What does make a noise is the effect of the inhibition on the adaptive potentialities of the patient once it is established. It follows that when certain essential weapons of adaptation become blocked and the needs and elementary drives of the person remain the same, crises of decompensation will be produced from time to time. Some of these, such as the disturbances of the autonomic nervous system, are constant, and some of them, such as the epileptiform seizures and the outbursts of aggression, are periodic. Since the human being is a very complicated and highly integrated organism, one cannot induce an inhibition in one place without expecting that the patient's whole conception of himself and of the outer world will be markedly modified as a consequence of this process. The neurosis is therefore an attempt to reestablish an adaptation on the basis of the now reduced resources. And this is the point at which the social consequences of the traumatic neurosis become important, because as a consequence of the inhibition the patient attempts to reestablish a parasitic existence.

The most important thing to note is that the inhibitory process is a defensive reaction. It is the task of the physician to see to it that this defensive reaction does not become consolidated and a new adaptation established on the ruins of what remains of the uninhibited personality. This principle gives some definite indications. It means that there is reason for haste in diagnosis and treatment. It is a race against time. In this particular instance time becomes very costly to the government. Unlike the hysterias and obsessional neuroses of peace time, these traumatic neuroses do not tend to become more complicated with time. The prognosis is best for those manifested by highly organized defensive rituals and poorest for those associated with syncopal phenomena. The traumatic neurosis must be sharply differentiated from hysterical conditions which are precipitated by the traumatic situations. They can be easily differentiated, because the clinical manifestations, the dream life and the character changes are different in each case. The epileptiform conditions can be differentiated from essential epilepsies by the presence or absence of startle reflex, the electroencephalogram and the character of the epileptiform seizure. With regard to malingering, no malingerer can imitate the symptom complex of the traumatic neurosis unless he is carefully coached. The combination of a peculiar dream life, irritability and outbursts of aggression is one which no malingerer can simulate.

What the reader is perhaps most interested in is the treatment of these conditions. The chronic conditions will be those principally discussed. It is quite true that in the present stage of organization this problem seems a little remote, but it is of the highest importance. The treatment of traumatic neurosis in the acute stages is prophylactic and in the chronic states is reeducative. The real therapy should be done in the acute stages, and no chronic form of traumatic neurosis should be allowed to develop. I am speaking, of course, of ideal conditions. To execute a plan of this kind a large and well trained staff is needed, and it is questionable whether the urgent problems of service can permit such a prophylactic program much time. It can be said with certainty, however, that the more effort is made along lines of prophylaxis the less expensive it will be for the government to deal with the postwar problem.

If it is known that the essential pathologic mechanism of the traumatic neurosis is a reflex inhibition and that as a result of it the patient's conception of himself and of the outer world undergoes a drastic change, one can direct one's therapy in the acute stages to deal with this contingency. Fortunately, in the acute stages this can be done with greater ease than after the neurosis has become chronic. The sooner after the onset of symptoms it is done the easier it is to obtain a cure. It must be done before the personality has had a chance to consolidate itself in its new organization.

It is my opinion from three years of constant contact with chronic war neuroses that over 90 per cent of them were undiagnosed and untreated. By the time the patients were disbanded from service, most of the neuroses were hardened and consolidated. In many instances treatment did not begin until four years after dismissal from service. In the meanwhile most of the patients were bandied about from one hospital to another, the diagnoses ranging from neurocirculatory asthenia to epilepsy, and no effective treatment was given. Credit should be given to Dr. Walter L. Treadway, who saw the acuteness of this problem and who took steps to remedy this situation by the establishment of clinics all over the United States for the treatment of these disturbances. By the time the clinics were established, the Veterans' Bureau was already operating, compensation for disability was instituted and the traumatic neuroses made a large number of compensable disabilities.

I shall cite 1 case which will illustrate the nature of the traumatic neurosis, the character of the disturbances it creates, the forensic problems connected with it and the therapeutic procedure indicated.

REPORT OF A CASE

The patient was a man of 30 when I first saw him, in 1923. He had enlisted voluntarily in the service, in a branch of his own choice. He entered the aviation department, with duties as a mechanic. There was no history of neurotic traits prior to service. He was an agreeable-looking man with a normal sexual history and had been married before he enlisted. He had never been in France. The traumatic experience that overtook him happened in a flying field in Texas.

He and his pilot went up for a practice flight one morning, and a mishap occurred, the exact nature of which he could not relate but as a result of which the plane crashed. The pilot was killed immediately. The patient escaped with his life. He was hospitalized immediately, and the symptoms of which he complained to me six years later began about a fortnight after his admission to the hospital. He had a cut on his forehead and some internal injuries, which were apparently not serious. He was subsequently operated on, however, for a dislocated kidney. After being in the hospital for some months he was discharged but found that he could not resume active duty because of his symptoms. I do not know what the original diagnosis was, but I do know from the large folder that accompanied him on his first visit to me that the diagnosis most frequently made during the six years prior to the time I saw him was epilepsy. No issue was raised about whether it was connected with the service or not, because it followed so closely on his accident. He had been treated with barbiturates and occasional hydrotherapy, and, owing to the fact that his symptoms prevented resumption of his former occupation, he was placed in vocational training as a vulcanizer. He came to me in 1923, in the course of a routine examination for the establishment of his compensable disability. He was accompanied by his wife because he was too feeble and too scared to come alone. One could see that he had once been a pleasant-looking person, but on examination his complexion was cyanotic and his eyes dull. He complained of convulsive seizures, lapses of consciousness, vertigo, headaches, irritability to noise, inability to do any persistent work and sleeplessness due to the recurrence of terrifying nightmares. He said that he practically preferred loss of sleep to these terrifying dreams. As a result he had lost much weight. He did not want any treatment. He said that for four years he had been treated with pills and that if it was necessary he would take some more, but he thought that he had had enough. However, on the basis of his history I decided to try to relieve his symptoms. Instead of being eager to cooperate to this end, the patient showed no interest whatsoever. In fact, I am quite certain that his visits began largely because he felt that if he refused to come for treatment his compensation would be cut. He therefore came reluctantly, without any anticipations.

The management was entirely psychotherapeutic. At no time during the treatment did I attempt to use either drugs or hypnosis. The process was reeducative. I began with the study of his current symptoms and demonstrated to him that the convulsive seizures and the loss of consciousness were repetitions of reactions that began with the traumatic experience. I demonstrated to him that I could reproduce any of his symptoms at will. I demonstrated the nature of the protective device that he was using not in such a way as to cure his symptoms but to produce them. I showed him that his defensive maneuvers had all miscarried; that his conception of himself had become completely altered, and that his conception of the outer world had changed from that of a free and familiar place in which he operated with confidence to that of a realm filled with all varieties of hazards and dangers against which he felt helpless. I have published the details of this case history in another place, and those who are curious may refer to it.

The treatment gave the following results: His symptoms completely disappeared; he was able to resume his former occupation; he slept well; his inhibitions to work disappeared; the nightmares ceased, and the convulsive seizures disappeared entirely (but not until several very dramatic episodes had occurred). I dismissed this patient after about fifteen months of treatment of varying intensity with the full confidence that his rehabilitation was complete.

The success of treatment in this case, however, was the exception and not the rule. I have reported the case largely to demonstrate the serious social dislocation that takes place as the result of the traumatic neurosis. No words can describe the tortures and discomforts to which this man was subject or the discomforts that his wife and children suffered in connection with him. I have used this case as the basis for an appeal and to demonstrate the urgent necessity for organizing and training psychiatrists to deal with conditions of this kind. Vast numbers of similarly affected patients remain untreated and uncured, an expensive and ungrateful burden for the community to carry. If the neurosis in this case was cured after it was six years old, it surely could have been cured when it was six months old. Meanwhile the patient had cost the government anywhere from $6,000 to $10,000 in medical care, in compensation and in social service work. Furthermore, he was a sick, disgruntled and vindictive person, who was of no use to anybody. I make this appeal because I fear that the errors of the past may be repeated, and this is one aspect of the war which can be handled with economy to every one's advantage if only the experience of the past is remembered.

It is not enough to compensate the patient for his disability. In fact, that is a practice which redounds to the disadvantage of the community as well as to that of the patient. Compensation for disability should be reserved for patients with neuroses which prove themselves intractable after years of persistent and diligent effort. It should under no circumstances be used as a perfunctory gesture of discharge of an obligation to a person who has lost the ability to enjoy living. It is the obligation of psychiatrists to cure these neuroses or to prevent their development.

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PSYCHOGENIC FACTORS IN ASTHMA

by

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SINCE earliest times it has been suspected that psychological factors play some rôle in connection with bronchial asthma. In the last few decades the discovery of the significance of allergic factors in this disease has tended to divert interest away from earlier observations that asthma is frequently associated with some sort of emotional instability and that asthma attacks are often precipitated by acute emotional conflicts. In the present study we wish to return to the problems presented by these earlier observations. In so doing we have been interested first of all to determine the nature of the emotional disturbances associated with asthma and their relation to the attacks but also secondarily to inquire into the relation between these emotional disturbances and the allergic factors which have been more recently discovered.

The following report is based upon investigations carried out by Doctors Alexander, Bacon, Eisler, French, Gerard, McLean, Mohr, Ross, Saul, Tower and Wilson, supplemented by the writer's detailed and comparative study especially of the dream material of our asthma patients. Twenty-four cases of bronchial asthma were analyzed at the Chicago Institute for Psychoanalysis over periods of one to 26 months. Of these six were men, ten were women and eight were children, four boys and four girls. The cases chosen were patients in whom allergic hypersensitivity had been previously demonstrated by means of allergic history, skin tests, etc., as judged by an experienced allergist. In addition Dr. Siegfried Bernfeld has supplemented our studies by analyzing and summarizing the case records of eight asthmatic children who have been under close observation since birth by the Institute of Child Welfare at the University of California at Berkeley.

Patients who undertake and continue through an analytic treatment must be patients who are suffering from some sort of emotional disturbance. It is impossible therefore to draw any significant conclusions from the fact that in all the patients that we analyzed the asthma was found associated with emotional difficulties of varying grades of severity. It will be interesting to inquire, however, whether the emotional conflicts and personality structure in these patients show any common features as contrasted with patients suffering from other forms of disorder.

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An analysis tends moreover to mobilize emotional conflicts which may previously have been latent, and this might be expected to throw into relief the rôle played by emotional factors as contrasted with allergic factors in precipitating the attacks. It will be of interest nevertheless to inquire as to whether the emotional situations which seem to precipitate the attacks present any specific common characteristics. If they do we may then inquire whether emotional conflicts of this specific character may perhaps also have been present as precipitating factors for other asthma attacks which preceded the analytic procedure.

Upon passing our cases in review, our first impression is that they vary considerably both in their personality traits and in the type of emotional disturbance for which they sought treatment. A number of our patients were particularly good children and were characterized in adult life by an urge to help and give to others. Some of our children's cases on the other hand were brought to treatment because of their particularly aggressive behavior. In one of our adult patients and in one of our children the picture at the beginning of the treatment was of a compulsive character with mild compulsive neurotic symptoms. Still another, a man, sought treatment originally on account of conscious homosexual impulses. Upon superficial examination therefore there seems to be a considerable range of divergence in the personality picture presented by our asthma patients.

It is much easier at the outset to demonstrate common features in emotional situations that seem to precipitate the asthma attacks. Let me cite a few examples.

A male patient of Dr. Saul's reports that he developed asthma for the first time shortly after marrying against his mother's opposition. Another attack is associated with his sleeping with his wife at a camp in a room separated by only a thin partition from the room of the director, an "old woman" who objected to the patient and his wife talking after 10 P.M.

A male patient of Dr. Catherine Bacon reported the following two dreams the day after he had had a basal metabolism:

a. This morning. Was in a Catholic church. Three priests were in front of him and they had gleaming eyes. Their eyes were sparkling with delight. Patient was evidently becoming a Catholic. He thought of wife's remark Catholics are so glad to have a Protestant in their ranks. He thought the gleam was due to their getting him away from Protestants. Their eyes gleamed so brightly that it was like jewels. Remembers no color. He would have had more to this dream if he hadn't waked up wheezing.

b. This morning. He was also awakened from this by wheezing. This dream preceded the first one. A naked woman. She was lying down stretched in front of him with feet toward him and her legs stretched apart. She didn't represent a woman all the time, for part of the time her legs became writhing snakes.

Patient associates to the snakes in the dream last reported (actually the one which occurred first) fear of being poisoned by a rattlesnake; having an affair with a woman—he would be in danger of trouble and maybe disease; snakes that wrap themselves around a victim suggest the idea of a woman twining her legs around him and crushing him; "domination would come into that too" he adds. The dream is in reaction to the analysis as a temptation situation. Patient vainly attempts to ward off the sexual temptation by substituting phallic symbols for the female genitals but the attempt fails and he awakens with asthma. The other side of his conflict is portrayed in the second dream (the one reported first). The three priests correspond to the three men present to observe patient's basal metabolism test of the day before. Their gleaming eyes portray the danger that they will see through patient and detect his incestuous wishes toward the analyst. The manifest dream is an attempt to defend himself from this danger. In the manifest dream the priests are not offended by patient's incestuous desires but their eyes are sparkling with delight at the prospect of converting him to a new faith. In the context it is easy to surmise that the new faith is the psychoanalytic "faith" which permits and encourages one to become conscious even of incestuous desires without fear of offense.

It will be noticed that in all three of these instances we find an identical conflict. In each case the patient is exposed to a temptation which would estrange him from a parental figure, usually the mother. In the dreams reported by Dr. Bacon's patient we see this conflict portrayed particularly vividly. The patient is struggling desperately to ward off the temptation and the associated danger of losing the parents' love. He attempts to deny the temptation by substituting phallic symbols for the female genitals and then in his second dream he attempts to ward off the fear of loss of the parents' love by appealing to the tolerance of psychoanalysis for unconscious impulses and picturing the analysts as trying to take him into their fold instead of expelling him from the church as he really fears they will do. In both cases he awakens wheezing. It is only a short step to infer that the attack of asthma occurs at the point where his defenses fail at the moment when he is suddenly exposed to the conflict between an acute temptation and his fear of losing the mother's love.

With this sort of fundamental conflict we should expect that the tolerance offered by the analysis to the forbidden unconscious wishes would acquire an ambiguous meaning for the patient. At first the tolerant atmosphere of the analysis might be expected to quiet the patient's fears of losing the mother's love. Here at last is a mother who will not turn away from the patient. But very soon this same tolerance acquires a dangerous seductive character. Forbidden impulses thus encouraged into consciousness now awaken old fears that the analyst, the new mother, will behave like the original mother and will punish the patient's forbidden wishes by withdrawing her love.

I regret that time does not permit me to give examples of the numerous dreams which could be selected to illustrate this double aspect of the transference. Over and over again these patients become blocked just at the point where the unconscious material is leading up to a confession. They fear to make this confession and awaken with asthma.

Most of these patients have a very strong urge to regain the love of the mother by confession. In fact this urge to confess sometimes goes to ridiculous extremes.

For example the patient of Dr. Saul's to whom I have already referred was at one time seduced by a girl almost to the point of having intercourse with her. Then the patient suddenly left her and rushed to his mother to confess the episode. The mother wept and made a great scene. A sequel to this incident is particularly instructive. After the interruption of his analysis the patient, who was a seasonal case, had lived through the spring and fall seasons during which he was usually subject to asthma without an attack. Then in January he responded to the telephone invitation of a girl from out of town, went to her hotel room and they got into bed together. He had an orgasm but not intercourse, then fled in terror to his wife to whom he confessed only the non-sexual part of the story. During the succeeding two months he had a number of attacks of severe asthma. The attacks ceased when he finally gained spontaneous insight into the fact that they were a reaction to this incident.

Incidents of this sort occur frequently in the histories of our asthma patients. So long as this technique of winning back reconciliation with the mother by confession is successful, the patients appear to be protected from asthma attacks. But sometimes one is afraid to confess. Then as in this dream the confession is choked in one's throat and in its place occurs an asthma attack.

Confession is a defense that utilizes speech and speech is a respiratory mechanism. It is therefore perhaps not surprising that it should have so intimate a relationship with the asthma attacks. It is interesting to note moreover that there seems also to be a very intimate relationship between asthma and crying or laughing. There is much to suggest in fact that the asthma attack is really a sort of equivalent of a cry of anxiety or rage which has been inhibited and repressed. One of the first reactions of the child upon separation from the mother at birth is to cry and during early infancy and even later, crying remains the predominant reaction of the child in situations of helplessness when he can only wish for the mother to return to him. In later life this primitive cry is modified into speech and in confession retains the function of maintaining the bond between the child and mother. For some reason, in the situations which provoke asthma attacks the child is unable to cry. Some of our patients state that they have not cried for years and others boast that they have never been afraid. In other cases it is apparently only in certain situations that crying is inhibited. Of particular interest however is the fact that we are sometimes able to observe the cessation of an asthma attack and the appearance of crying in its place. Such replacement of asthma attacks is particularly apt to occur at times when the analysis is beginning to achieve some degree of resolution of the asthma attacks.

So far we have found that the acute asthma attack occurs in place of a repressed cry in reaction to a temptation that threatens the patient with loss of the mother's love. Is it possible to define more accurately the nature of this temptation?

It will be noted that in all the instances cited, the temptation is a sexual one. The relation of the asthma attacks to the Œdipus complex differs somewhat according to the sex of the patient. In male patients the typical conflict is between sexual urges toward the mother and the fear of losing the mother's love. A typical family constellation in the early childhood of these patients is one in which the mother is over-protective to the little boy and binds him to her in a dependent relationship but immediately rejects the first signs of infantile genital interest in her. This creates a situation in which the first infantile stirrings of genital (phallic) sexuality become a temptation that threatens to deprive the little boy of the mother's love upon which he is so dependent. One is struck with the frequency with which the mothers of these patients play this double rôle, at once seductive and prohibitive. Four of our six adult male patients, for example, had continued to sleep with the mother until the age of puberty or later.

Fear of the father on the other hand seems not to play so great a rôle in connection with the asthma attacks. It is rather the loss of the father's love that is feared. The father seems in fact to play the rôle of a mother substitute.

In girls the situations precipitating attacks seem typically to be ones in which the first stirrings of sexual interest in the father threaten the little girl with estrangement from the mother. A frequent constellation in early childhood is one in which the father plays a somewhat seductive rôle but the mother binds the little girl to her in pregenital dependence upon condition that she betray no sign of awakening genital sexuality.

It should be added that due to the intense repression of sexuality in many of these cases a superficial study of the attacks may be in danger of overlooking the importance of a sexual temptation in precipitating an attack. In such cases the patient will seem to have almost no interest in sex and the attack will be attributed to some other incident of a much more superficial character.

A patient of Dr. George Mohr's for example attributed her first asthma attack in the analysis to her worry about letting her child go with the father on a cold day without underwear. The preceding analytic material, however, pointed to the patient's first unconscious sexual transference wishes toward the analyst. The next attack of asthma some weeks later followed an exhibitionistic dream in which the patient was herself without underwear.

Sexual wishes arising out of the Œdipus complex are not, however, the only wishes that precipitate asthma attacks by threatening to disturb the patient's dependent relationship to the mother. The birth of younger children and especially the discovery that the mother is pregnant plays an exceedingly important rôle in precipitating asthma attacks. It is not difficult to understand why this is the case. The possibility of another child already threatens the patient with the loss of the mother's love and stirs up aggressive impulses to take the unborn child from her, but these aggressive impulses in turn only increase the danger that the mother will withdraw her love.

In one of Dr. McLean's cases, a man, a period of asthma attacks dated from his discovery that a married woman with whom he was having sexual relationship was pregnant. Another period of asthma attacks began during his wife's first pregnancy one year after his marriage at which time patient proposed an abortion but his wife refused. During the analysis many attacks of asthma were stirred up by a discussion of what the patient felt to be his wife's neglect of his children, a complaint which upon analysis proved to be a substitute for the unconscious complaint that his wife neglected him for the children.

It is interesting that it is sexual temptation rather than forbidden sexual gratification that usually serves as the precipitating cause of the asthma attack. Much of our material suggests that if the patient has gone so far as to commit himself to an overt sexual act this is apt to be already a sign that he has mastered the panic fear of loss of the mother's love to a degree sufficient to avert the asthmatic attack. The asthmatic attack seems rather to be a reaction of acute helplessness. At the moment of temptation the dependence upon the mother is so great that the threat of losing her completely overpowers the patient. The mechanism is similar to that postulated by Freud for acute anxiety. The asthma attack occurs only when patient is overpowered by a mass of excitation which the ego is powerless to master.

The fantasy material of our asthma patients is full of symbolic representations of intrauterine fantasies in symptom-free periods as well as in the material accompanying asthma attacks and the asthma attacks seem to be associated with material symbolic of interruption or disturbance of the protected intrauterine state. Alexander has attempted to check this impression statistically and finds that the proportion of symbolic intrauterine fantasies in the manifest dream content averages considerably higher in the asthma patients than in any other class of patients who were used as controls. The nearest approximation to the proportion found in asthma cases is in some cases of anxiety neurosis.

The fact that the asthma attack seems to be an acute reaction to a conflict which is too intense for the ego to master enables us to understand better the defenses by means of which the ego is able to protect itself from asthmatic attacks during the symptom-free periods. These defenses vary a great deal and the numerous possible defense mechanisms account for the great variation in the superficial clinical picture which we noted at the beginning of our discussion.

(1) One type of defense is found in practically all cases. I have already alluded to the urge to seek reconciliation with the mother by means of confession. This is but one example of the need that our asthma patients show to seek reassurance that the mother will really not be offended in spite of the patient's unconscious wishes. As already mentioned many of our patients were particularly good children seeking to assure themselves in this way of the mother's love. A disposition to win love by helping and giving to others is very common in our asthma patients and serves the double function (1) of winning parental approval and (2) of vicariously gratifying the patient's own need for love and reassurance by helping someone else as the patient himself would like to be helped and loved. Other patients develop a great facility for making use of rationalizations which were presumably acceptable to their parents.

Still other patients utilize sickness and suffering in the well-known manner as means of regaining the sympathy and affection of the parents. One finds therefore very often that other symptoms such as rheumatic pains or headache for example will tend to protect the patient from attacks of asthma. In cases where the asthma has become more or less chronic the mechanism seems to be one of a secondary adaptation to the symptom by means of which the child has learned to utilize the asthma attacks themselves as a means of regaining for the patient the mother's love. One of our male patients in fact was regularly taken into the mother's bed whenever he had an asthmatic attack.

(2) Another group of defense mechanisms offer a sharply contrasting picture. These are defenses by the familiar method of attempting to master a traumatic event which has been passively experienced by active repetition of it. In this connection we have already noted that it is sexual temptation rather than forbidden sexual gratification that usually serves as the precipitating cause of the asthma attack. It would seem that overt sexual activity already implies a degree of mastery of the traumatic fear of the loss of the mother's love sufficient to avert the asthmatic attack.

Especially in a number of our children's cases we can observe an attempt to master the fear by aggressive behavior. A little girl will ward off the dangerous temptation to father incest by castrative impulses toward the father, or a little boy will attempt to master his fear of seduction by the mother by aggressive attacks (anal, oral or both) upon her. Similarly our adult women patients defend themselves from the temptation to genital interest in the father by mechanisms of masculine protest and father identification such as are familiar to us in all types of neuroses in women and in one of our male cases competitive attitudes toward the father served in a similar way to ward off the dangers arising from the patient's extreme dependence upon the mother's love.

Sometimes the aggressive impulses are direct reactions to the fear of suffocation and take the form of choking the mother. In a dream reported by Dr. McLean's patient, the patient urinated upon a hot stove in a boxcar as he saw two inspectors approaching and then ran away to watch with glee how they would be choked by the bad smell. Corresponding to this aggressive defense against the dangers arising from the patient's sexual impulses, this dream was not accompanied by asthma.

(3) A third group of defense reactions may be described as attempts on the part of the patient to withdraw from the whole temptation situation and make himself independent of the mother by means of autoerotic and particularly anal erotic substitutes. In many of our cases a marked periodicity is demonstrable in the course of the analysis. There will be long periods during which the patient misses hours and comes only infrequently to the analysis and during which the material is characterized by anal erotic attitudes of independence and often by a peculiarly impersonal attitude toward life. During these periods the patient is free from asthma attacks. Then perhaps after a long interruption of the analysis the patient will begin to respond again to what we have already referred to as the seductive phase of the transference. Forbidden sexual impulses begin to be encouraged back into consciousness. Finally, however, the temptation becomes intense enough to become again a threat to the patient's bond to the mother and another asthma attack is precipitated.

In connection with these withdrawal mechanisms it is interesting to note the reactions of our asthma patients to the danger of actual physical separation from the mother. It would seem that most asthma patients are particularly prone to attacks of asthma at times when they are undecided or in conflict as to whether or not to leave some mother figure. In the analysis we were early struck with the fact that asthma attacks tended to occur predominantly on weekends or during the period just preceding more prolonged interruptions of the analysis. Interestingly enough, during vacation periods, after the first few days, the patients were often singularly free from attacks. Then just prior to the resumption of the analysis the attacks would again begin to occur. In the history of these patients also there would tend to be a relative freedom from attacks during periods when the patients had actually achieved a physical separation from their mothers. It would seem that the precipitating situation is not the actual fact of separation from the mother but the indecision and conflict between the urge to cling to the mother and the need to separate from her.

A case of Dr. Eisler's presented at the beginning of the analysis a related type of defense in the form of mild compulsive symptoms. It was not difficult to determine the relationship between these compulsive symptoms and the deeper fear of losing the love of the mother. The compulsive neurotic symptoms had arisen by the familiar mechanism of introjection of the mother and internalization of the conflict. The rôle played by the mother in the deeper conflict was now played by the patient's conscience and in place of the fear of loss of the mother's love there appeared guilt reactions with an anal-erotic coloring, feelings of being impure. By means of this internalization of the conflict the patient protected herself from the danger of an acute estrangement from the mother. The patient developed asthma attacks for the first time in the analysis only after this compulsive neurotic purity complex had been interpreted and worked through.

Summing up our findings: We have concluded that the asthma attack is precipitated as a rule by a temptation which threatens to estrange the patient from a mother figure and our discussion of the numerous possible defenses against this conflict would suggest that the common feature in the otherwise divergent personalities of our asthma patients is the fact that the personality of these patients is built up in large part around the task of mastering by one means or another the patient's fear of being separated from the mother.

We may perhaps best conclude with a very few observations that have a bearing upon the relation between allergic and psychological factors in the etiology of bronchial asthma.

First we have seen that asthma attacks tend to be precipitated by emotional conflict situations of a rather uniform and typical character. It would seem extremely improbable that these emotional conflict situations should in every case have coincided with an allergic stimulus which was absent during the often rather prolonged periods during which the same patient's emotional withdrawal from the analysis was marked and during which he also was free from asthma attacks. Moreover a few patients experienced an initial relief from asthmatic attacks upon starting the analysis due apparently to the reassurance resulting from the analyst's interest in them and most of our patients developed an aggravation of the frequency and severity of their attacks as the analysis, after working through the defensive mechanisms, approached the fundamental conflict that we have been describing. In a few cases whose attacks had been confined to a particular season, asthmatic attacks appeared during the analysis also during other seasons of the year.

In some cases the substances to which the patients were allergically hypersensitive proved also to play a significant rôle in their psychological material. A patient of Dr. McLean's whose skin test was strongly positive for ragweed recalled that at the age of six he had lost his brother in a hay field where the brother remained all night before he was found. During the analysis the memory of this incident was frequently accompanied by severe wheezing. Other patients who showed marked hypersensitivity to cat hair also dreamed frequently of temptation situations in which the temptation was symbolized by a cat. Still another patient who expressed a violent conscious resentment of children displaced the greater part of her normal maternal interest upon cats and upon test developed an extreme allergic reaction to cat hair.

Finally, in a number of patients as a result of analytic therapy the asthmatic attacks were greatly relieved and we could observe during the analytic sessions the gradual replacement of the asthmatic attacks by crying and then by a diminution of the fear of sexual temptation.

One patient of Dr. Wilson's who had previously shown a marked sensitivity to horse dander and in whom horses regularly elicited attacks of asthma became later able to ride horseback without any trace of asthma.

All these observations would suggest that psychological and allergic factors probably stand in a somewhat complementary relationship to each other in the etiology of bronchial asthma, that in some cases asthma attacks may be precipitated by allergic factors alone, in others by emotional factors alone and that in still other cases cooperation of allergic and emotional factors may be necessary to produce the attacks.

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HOSTILITY IN CASES OF ESSENTIAL HYPERTENSION *

by

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I. INTRODUCTION

IT has been known for a long time that acute emotional states can cause transient elevations of blood pressure, and it has been suspected that emotions may be of etiological importance in the chronic condition of essential hypertension. Just how critical a rôle the emotions play etiologically in this condition is not known, although some cases have been reported in which chronically elevated blood pressure has returned to normal after the patient experienced emotional relief. Nor is it known whether or not any specific emotional situation is correlated with essential hypertension, *i.e.,* whether any specific psychology of essential hypertension exists. Anger is the emotion connected with high blood pressure by the laity, an impression which is confirmed by scientific investigation. This communication describes the main psychological features of seven psychoanalyzed cases of essential hypertension. This series is of course very small, but the uniformity of the psychology is at least suggestive, and receives support from other cases, studied more briefly, and from the short reports of cases in the literature. The more thoroughly studied cases were two men and two women with essential hypertensions which ranged from 140 to 200 systolic over 80 to 130 diastolic. The blood pressures were recorded by mercury manometer before and after every analytic session. Correlations between the fluctuations of blood pressure and the psychological material are dealt with by Alexander in this symposium. Graphs of these daily blood pressures for periods of from several months to several years will be published elsewhere. Besides these four cases, psychoanalytic material was also available on three more psychoanalyzed cases whose pressures ranged lower. The patients were all examined medically.

References to the literature appear in Weiss' review in this journal and will not be repeated here. This paper is a report of an effort to determine whether or not any specific psychological features could be found in a

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small series of essential hypertensives. The conclusion is that such a correlation probably exists, but further study is required on these and on more cases, before a clear-cut answer can be given. The common findings in these few cases were (1) the status of a particular conflict situation, and (2) the status of the hostilities.

II. The Conflict Situation

The central conflict situation was strikingly similar in the four cases. This conflict situation is a widespread one and its distinguishing features in these cases lay in its status and the way in which it was handled. In brief this conflict situation consisted of (1) a masochistic submissive and an oral dependent attitude, originally toward a dominating parent, leading to a masochistic submissive attitude to a dominating conscience, to the parent of the same sex, and to parent-substitutes in later life; (2) chronic, unsuccessful, unsatisfied rebellion and hostility in protest against this submission. The rebellion and hostility were conscious or near to consciousness and not expressed directly because of fear of loss of love. The submissiveness was not conscious and bitter hostility opposed making it conscious in the analyses. There was also rage at not getting the desired passive oral dependent gratification. Another prominent feature was excessive fear of heterosexuality, which was to some extent indulged despite the anxiety. The most characteristic general feature of all the cases was that both the oral dependent wishes and the hostile aggressive impulses were internally inhibited and were never satisfied in life or in symptoms. These patients were neither passive and dependent nor hostile and aggressive. They could give in to neither trend. During periods when they could and did, their blood pressures were markedly lower.

III. Clinical Data

Mr. A. came with a complaint of anxiety. He was in his forties, with a hypertension fluctuating from 160 to 200 systolic over 110 to 130 diastolic, which had been increasing for the preceding ten years. He was the only patient of the series with marked arteriosclerosis and somewhat impaired renal function, 65 per cent phenolsulphothalien excretion. He was one of a number of children, and had been spoiled and dominated by his mother who also dominated the physically strong father. His mother made him work from the age of six to contribute to the family who lost their money at that time. He reacted with lifelong bitterness to being thus prematurely forced to work after the earlier extreme spoiling. She forbade sports as dangerous, and later forbade the patient to see girls other than those of his own faith. He obeyed despite his envy of the boys who engaged in athletics and in sexual play with girls. She set him the ideal of wealth, inspired him with excessive ambitions and great expectations, and forced him into marriage against his will with a girl of her own choosing. Thus his whole life, his work, his religion, his marriage, came to mean submission to the mother—"bending the knee" as he put it—and also being forced out of the earlier situation of maternal spoiling and protection into excessive ambitious activity. He tried in vain for many years to escape or rebel against this unconscious attachment to the mother. Finally he actually got a divorce and tried to indulge in sexual promiscuity and alcoholism. He even took a girl to the Orient in an effort to escape his fears and be free sexually. But the anxiety was too great and he was forced to give up the rebellion. The patient's hypertension always increased during these periods in which anxiety frustrated his attempts at heterosexuality. Apparently in an effort to escape the conflict with his dominating mother, this patient turned to his father. But although on the surface his relations with men were less acutely disturbing, the dependence and submissiveness toward them was even more intolerable than toward women. Again the patient rebelled, using unconscious hostility as his defence. This was most clear toward his boss to whom again he would not "bend the knee." Besides his hostility from rebellion against his dependence and submissiveness, he would rage at not getting the passive receptive satisfaction he demanded, *i.e.,* at not being able to be dependent on others, but being forced to ambitious independent exertion and responsibility. But his rage from rebellion and from frustration was never directly expressed. He was quiet and gentlemanly with all. His rage at his mother was conscious and at his boss nearly so, though he knew nothing of the source (the submissive dependent wishes). The unconscious structure is that of paranoia. In a typical dream he is in bed with a woman when a big man enters with a flashlight, and the patient tries to flee in anxiety. It is a nightmare. The big man is the analyst, the flashlight the analysis. The patient tries to flee from his tendency to give up heterosexuality and to become dependent upon the analyst. The positive Œdipus conflict was also overt and intense in this case. The unconscious masculine competitiveness was intense and there were dreams of direct sexual advances to the mother. The mother had evidently been seductive as well as dominating. Her domination and seductiveness intensified the patient's feelings of inferiority and hostility to the father, and drove him to further dependence upon the mother and to an anxious, submissive, masochistic attitude to the father.

A full description of the second male hypertensive appears in Alexander's paper. It is typical of the male hypertensives we have studied. The female cases are not so clear. Briefly, Mr. B. was in early middle age. His hypertension was of 2 years' standing and ranged from 135 to 175 systolic over 90 to 120 diastolic. He presented a picture almost identical with Mr. A.'s. Mr. B. also had a domineering mother who drove him into a dependent (oral) attitude to her and into fear of her, and into an anxious, submissive attitude toward the father, who in this case also dominated the patient. This patient, like Mr. A., conformed perfectly, was a model citizen, and a compliant, obedient, subordinate. But although he never showed it, his wish to defy the father, repeated clearly in his relationship to his boss, was close to consciousness. Like Mr. A. he dared not express it in the slightest degree for fear of losing the love of his boss, business associates and social set. He expressed it privately by promiscuity and solitary drinking. These activities were compulsive reactions to situations in which he overtly submitted to a man but wished to defy him. For example, he would accept orders from the boss with complete obedience, but feel rebellious and hostile and on the verge of attacking the boss. He would then go out and indulge in alcoholism and promiscuous sexuality. Once the boss invited him to play golf. He dared not refuse, accepted graciously, but cursed himself violently for complying. His sexuality was compulsive and indulged in under the influence of alcohol, so that he wished to be cured of these episodes. He had no personal interest in these women, who were almost impersonal agents for indulging his sexuality. In fact he was potent with them only when under the influence of alcohol. He too showed very clearly later in the analysis his rage when his receptive wishes were not satisfied.

Both of these patients were chronically pessimistic, anxious, and mildly depressed. They tried to escape by recourse to alcohol and promiscuity, although they were really very inhibited sexually. Drinking and promiscuity were to them symbols of defying conventions, and means of escaping from dependence and submissiveness, and resulted in feelings of deep guilt and anxiety. When in the country, away from women, bosses, and obligations, both were much relieved. The psychoanalytic material showed that both struggled against strong wishes to be in second place, passive, submissive, dependent, and that both were in a chronic state of hostile rebellion against these wishes, since their pride demanded that they be first—independent, at the top. Hence their chronic defiance and hostility to bosses. This passive dependent trend was seen in their strong oral attachments to their mothers, and in their feminine identification with the women who were their sexual partners. Every attempt at intercourse resulted in acute anxiety. From childhood they felt intense guilt about sex. The parents had great expectations for their futures and they were driven by high ambition, but at the same time resented this drive and longed to give it up, be cared for, escape. Marriage was from duty and both rebelled against it. In both analyses the siblings were almost never mentioned or alluded to, so strong was the hostile rivalry with them and the oral attachment to the mother. A number of their early dreams were almost identical, namely dreams of being in a sexual situation with a woman and being seen by a man with consequent anxiety, and dreams of being inhibited in doing something. These dreams reflect the inhibition of the masculinity by the submissiveness to the father, which therefore causes much anxiety in the dreams, and is so fought against in life. Both men showed clearly the oral dependence on the mother and the masochistic passive submission to the father, and then the unsuccessful abortive efforts at hostile rebellion and defiance against the submissiveness. Mr. B.'s defiance found greater outlet since he actually could indulge the alcoholism and promiscuity, which Mr. A. wished to do but could not because of anxiety. It may be significant therefore that Mr. B.'s blood pressure was more fluctuant and averaged lower than Mr. A.'s. Both male patients were masculine looking, tried to use sexual promiscuity and alcoholism as outlets and showed the chronic unexpressed rebelliousness particularly in relation to their bosses. Both showed well developed positive Œdipus complexes as well as the negative, *i.e.* masculine competition with the father as well as submission to him.

Another male patient, seen only in a few interviews, presented a psychological picture strikingly similar to these two. He was mild-mannered and submissive. He was strongly attached to his mother in an oral form as was seen by his indulgence in periodic candy jags. His rage from rebellion against his own submissiveness, and oral dependence, and from thwarting of these wishes, was expressed early in life by temper tantrums, which lasted until after adolescence. Threatened with loss of love because of them, he succeeded in controlling them and became milder in personality. Within a year after suppressing them his blood pressure rose from normal on repeated examinations, to 160 over 100 and went slightly higher during the next decade. Physical examination was negative. This case shows clearly the importance of the oral trend and how suppression of rage was followed by increased external mildness of manner and submissiveness, and by the development of essential hypertension. Compare Alexander's case report, pp. 139–152.

Miss C. was in her thirties, unusually quiet and charming. In her own words, she had "retired in favor of" her mother and sisters. She felt that they were so much more attractive that she could not compete with them and she never had a single date until her middle thirties. She then began going with a man her own age, and just when the affair threatened to become serious, her blood pressure, hitherto normal on repeated tests, rose sharply to more than 200 systolic over 130 diastolic. (Compare with Mr. A. whose hypertension increased when his anxiety blocked his attempts at sexual intercourse.) She had had no sexual experience. She gave up men and stayed close to her mother to whom she took an oral dependent attitude, as shown in her dreams as well as in life. The mother was the strong, dominating personality of the family and the patient had no one else upon whom to depend for love, having relinquished men. The patient was of fine type, gentle, and conventional with a strong sense of duty and obligation. She was the only one of the patients whose rebellion against her submission to her mother and to her conscience was not very largely conscious. For example, she went off on a trip, but could no more feel free than she did at home, like Mr. A. Thus she was the most inhibited patient of the series and her blood pressure was the highest. This greater repression may have been due to her father's violent death in a probably purposive accident. This intimidated her and increased her dependence upon her mother. As an example of her submissiveness in the transference, she once thought the analyst had suggested that she do something that she did not want to do. She felt compelled to obey although she hated to (like Mr. B. when the boss invited him to play golf) and wept with impotent rage at her inability to resist complying, due chiefly to fear of loss of love.

Miss D., a patient of Miller's, like Miss C., consciously retired in favor of her sisters. She was in her early twenties, quiet and sweet in manner and expression. Her blood pressure ranged from 150 to 180 systolic over 80 to 110 diastolic and was of at least three years' standing. She was the breadwinner for the family, working to support them and to send her sisters to college. She spent most of her time at home in an oral relationship to the mother who fed and cared for her when she returned from work in the evening, as though she were the man of the family. She had many unsatisfied dreams of being fed by the mother. Like the other patients, she was overly generous to those dependent upon her and pleasant and gentle in personality with a sense of duty so great that she was over-working and sacrificing her own life in order to contribute to the family. But she had constantly to control a conscious bitter rebellion against her submission to her mother, to her boss (a man) and to her own conscience which forced her to relinquish pleasure, sex, and independence, in favor of excessive work. She had temper tantrums especially against her boss which she barely succeeded in concealing. This consciously controlled defiance of the boss was exactly like the two male patients.

Two other patients in connection with whom less complete psychoanalytic data were available, were women. Miss M., a patient of Grinker's, was about thirty, with an essential hypertension averaging 175/100. Most characteristic of her was her naïveté and the fact that she never got angry. In this case, too, the mother was the dominant member of the family and ran the family, and the patient formed a strong predominantly maternal superego. She felt she ought to have the mother close by, but always felt better when the mother was away. The patient had had no sexual relations, and very few social relations with boys, and still did not know where babies came from. The extreme repression of the heterosexuality seen in the other cases, especially of the women, is also conspicuous here. However, in this case, as far as was apparent after several months of analysis, the hostility seemed to be due less to rebellion against the submissive attachment to the mother, than to oral thwarting by the mother, *i.e.*, to anger at the mother for not satisfying all of the patient's demands upon her.

A mild fluctuating hypertension, frequently reaching 150/100, was found during the analysis of Miss O., a patient of MacDonald's. She was married, with two children, and developed anginal pains, panic and mild agoraphobia when her younger sister came to live with her. As in all the preceding cases, a dominating mother was prominent in the history and in the psychoanalysis. She sought constant approval from the mother, catered to her, had many oral demands upon her for care and attention, and also, largely in defence, death wishes toward her and sexual wishes for men which for a period developed into nymphomania, with demands for intercourse many times a day. Her psychoanalytic material was unusually overt. Thus the drainage of her hostility and her protest against the attachment to her mother was relatively successful, although at the cost of agoraphobia, nymphomania, and considerable disorganization of her personality.

The patients who showed the same conflict situation, but whose protest was comparatively successful and whose hostilities and sexuality were freer, showed some, but much lower, hypertension. A study is now in progress of the psychological correlations with the rises of blood pressure in these cases in which the pressure is normal some of the time.

IV. Controls

It is clear that dominating parents are common and that the conflict described is a general one and is not peculiar to cases of essential hypertension. However, pending further study of these and many more cases, the present material suggests that the *status* of the conflict may be peculiar to cases of essential hypertension. These patients submit, but they stifle intense hostility which is near to consciousness. As controls, it is easy to observe patients without hypertension who have this same conflict situation but who solve it in other ways. For example, one patient shunned situations in which his submissiveness would be stimulated, by doing independent free lance work, saying frankly that he was unable to work for a boss. He relieved unavoidable tensions by gambling in which he indulged with very little conflict. In other cases, the submission is accepted with very little protest or with some narcissistic compensation. A comparison has not yet been made of the psychology found in essential hypertension with that found in angina and in the cardiac arhythmias. The first impression is that the hostilities in the latter cases are freer, as seen in the dreams. In a small series of eight controls, I have not found hypertension in patients who have the same conflict as the hypertensives but who have workable solutions for it. Thus, so far as the control series has been examined, no essential hypertension has been found in cases in which (1) the submissiveness is accepted, (2) the problem is avoided by shunning submissive situations, (3) the rebellion and hostility are adequately repressed and bound by organized neuroses or find adequate outlets in life behavior or sexual activity by assuming forms which are not too conflictful and anxiety producing for the individual, or, *possibly* (4) the hostility does not arise from this protest situation, but from another source, for example, direct oral thwarting, but this is questionable.

V. Status of the Hostilities

The following was the status of the hostilities in the cases studied: The hostility was (1) intense and (2) chronic. However gentle the exterior, the analyses made it clear that these individuals were chronically boiling with rage.[1] (3) The hostility was in all these cases the central issue of the analysis, the pathogenetic element so to speak. (4) The psychological level of the hostility may be of importance since in all these cases it was close to consciousness. There is reason to suspect that the crucial point here may be the proximity of the hostilities to motility. (5) The hostility was in all cases very inhibited. On the surface these individuals were non-hostile and even overly gentle, but did not lack energy. They worked, in fact often overworked, and succeeded, while protesting against doing so. The hostility found no adequate outlet in behavior in life, through drainage by sexual activity (which often discharges unconscious sadistic impulses) or even in dreams, although there was apt to be considerable conscious hostile fantasy. (6) Although inhibited, the hostility in these cases was not adequately bound in an organized chronic neurosis, for example, paranoia, compulsion neurosis, chronic alcoholism, etc. Cases have been reported by Draper and Eisler in which the hypertension disappeared when the patient developed neurotic symptoms. The hostility was never adequately expressed but never relinquished. The regressive wishes to give up the struggle and accept a passive dependent emotional situation were also not accepted. Both were blocked.

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[1] One patient reported the following dream: "I heard the hissing of steam all around me and then realized it was within myself. I became tense and trembling with the pressure. An elderly woman called me 'the boss.' But I said: 'No, that man is the boss.'" In his associations the patient brought out his rebellion against his boss and against the analyst, and to the steam associated a machine trembling with the pressure of steam within. This pressure was his rebellious hostility against the boss and the analyst, chronic and unvented.

VI. The Common Psychological Features

Surveying these seven cases grossly, the following similarities are conspicuous. The first is the prominence of the conflict with a dominating parent, especially the mother. This was central in every case, but in that of Mr. B. the father also dominated the patient. Two main reactions were seen in the patients. The one was a submissiveness to the mother, transferred in part in the male patients to the father, thus producing in all cases a submissive situation against which the patient was in constant hostile, unsuccessful rebellion. This rebellion when it broke through took the form in the two men of promiscuity and alcoholism, and in the women of sexual wishes which were overtly indulged only by Miss O. In these few cases, those with the freer outlets had lower blood pressure levels. The other main reaction to the mother, prominent in all cases, was the oral dependent attachment to her which formed part of the submissiveness and was rebelled against, but which, when not satisfied, due to both external thwarting and internal inhibition (guilt, pride, ambition, and narcissism) lead to chronic rage at the frustration, and was a component of the alcoholism. The oral material and the anger from unsatisfied oral wishes were conspicuous in the material of all the cases.[2] In the case of Miss M. the hostility from thwarted oral wishes to the mother was the main theme, and the component of rebellion against the mother attachment not so important as in the other cases, at least so far as the analysis had progressed in several months. (It may be that hostile rebellion against the mother will appear later in the analysis.)

The second similarity was the repression of the heterosexuality with attempts to indulge it despite anxiety. Mr. A., after his compulsive attempts at sexual freedom, wished to give up heterosexuality entirely because it caused him so much conflict and anxiety. Mr. B. had no interest in the women with whom he was promiscuous, and usually never saw them before or afterwards. They were only part of the bouts of alcoholism and promiscuity which relieved the tensions from rebellion against his boss. In contrast is an anginal patient without hypertension. He was of the Don Juan type with real appreciation of feminine charms, found great pleasure in his relations with women, and could freely indulge his sexuality. The three women with the high blood pressures were strikingly similar in their repression of sexuality. Thus Miss C. never even had a date until she was past thirty. Miss D. had a very rare date, as a duty, at the behest of her mother. Miss M., nearly thirty, claimed such innocence of sexuality that she did not know where babies came from. In contrast was Miss O. When her impulses broke through she made excessive sexual demands. But her blood pressure only irregularly rose above normal.

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[2] This checks with Karl Menninger's statement that it is common to find in the histories of essential hypertensives that in childhood they have been thrust prematurely into situations of self-reliance.

The third similarity was in the status of the hostilities, as already described.

Other similarities are less definite. All of these patients were "nice" persons, as has often been noted. The reason for this has not been worked out. Probably it is due to a combination of the guilt and submissiveness. In general it seems especially difficult for essential hypertensives to come for psychoanalysis, probably because of their guilt and their fear of the oral and submissive wishes.

In all cases, the problem was a very deeply ingrained and repressed one, intimately organized into the whole personality. Whether or not the progressive rise in the level about which the blood pressure fluctuates is connected with progressive organization of the personality into a less flexible form, and what the interrelationships are, is a question of great theoretical as well as practical importance. The therapeutic aspect of it is discussed in Alexander's paper. Probably once the pressure ceases to return to normal levels in its fluctuations, both psychological and physiological therapy becomes more difficult. However, our observations indicate that psychoanalytic treatment has at least some effect in reducing or arresting the progress of the hypertension in these cases, but it is too early to draw definite conclusions as to the therapeutic results.

VII. Comment

As stated at the outset, this communication is a report of the preliminary phase of this study. Many essential problems remain untackled and unsolved. An important problem at this point is whether the essential hypertension is connected with hostilities from *any* source, such as oral thwarting, depending only upon their intensity, and status, or whether the conflict situation found in these cases is an essential part of the picture.

Another important question is that of the rôle of the anxiety. The hostilities have been examined thus far without special attention to their direction and relationships. It may be that the hypertension is most directly connected with fear, particularly of the conscience.

The rôles of the heterosexuality and of the oral demands are also not worked out.

Two other approaches are promising. The one is a study of the psychological material in connection with the fluctuations in blood pressure, and in connection with the level about which the pressure fluctuates. Such correlations are reported in Alexander's paper and are being studied in the other cases. Some of the records contain daily blood pressure recordings and analytic material, over periods of several years. In one case, Mr. A., the level of fluctuation clearly fell after two months of psychoanalysis, as the patient accepted and enjoyed the passive situation. But after another six months, when it became conflictful, the level rose, and was high for nearly a year during intense hostile transference.

The other approach is that of a "microscopic" study of the dreams as done by French. This technique reveals elements not otherwise discernible. A lead is the impression of French that the proximity of the hostilities to motility may be critical.

VIII. SUMMARY

An attempt is made to describe the common psychological features in seven cases of essential hypertension. The prominent similarities are (1) the prominence in every case of a dominating mother, with submissiveness and oral dependence toward her, transferred in the cases of the two men to their fathers; with consequent chronic, hostile, unsuccessful, nearly conscious rebellion against the submissiveness, and chronic unexpressed rage at unsatisfied oral demands and at independent activity and work; (2) marked inhibition of heterosexuality, although indulged to some extent despite anxiety; (3) the status of the hostilities—intense, chronic, inhibited, near to consciousness and perhaps to motility, not adequately expressed, and not adequately repressed and bound as by an organized neurosis; (4) the inability to accept and satisfy either the passive dependent wishes or the hostile impulses, so that these individuals were neither weak and dependent nor aggressively hostile, but were blocked in both directions. During periods when either trend was more satisfied, the blood pressure was markedly lower.

These results are more than suggestive but the series is too small as yet to establish conclusively whether or not these psychological features are generally typical for cases of essential hypertension.

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SOME PSYCHOANALYTIC APPLICATIONS OF THE PSYCHOLOGICAL FIELD CONCEPT*

by

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The Ego's Task of Integration and the Psychological Field

For a number of years I have been interested in reëxamining psychoanalytic knowledge from the point of view of the integrating task of the ego. There have been three main phases in the development of psychoanalytic thought. At first, interest was centered chiefly upon the id, upon the repressed forces. The repressing forces at this time were for the most part merely annoying obstacles in the way of investigation of the repressed unconscious. Then came a phase of interest in the superego, in the repressing forces. At present we are entering a phase of interest in the functions of the ego.

I regard it as a symptom that we are not yet fully out of the superego phase, that much of the present psychoanalytic interest in the ego still centers about the mechanisms of defense, and about the struggles of the ego to defend itself against excessive demands of the id. As I have pointed out elsewhere the defensive function of the ego is comparable to the activities of a government when its very existence is threatened by a revolution. Under these circumstances its normal peacetime function is apt to be very much disturbed, perhaps even thrown badly out of gear. Study of the normal functioning of the ego must be a study of its synthetic integrative activity.

The chief difficulty in the way of studying the integrative functioning of the ego is the fact that it is so unobtrusive. When a machine is operating smoothly we are not aware of its mechanisms. Only when something gets out of order are we reminded that its normal smooth working is something that needs to be analyzed and understood.

There is, however, a way to get around this difficulty. Let us as observers put ourselves in the ego's place. As observers we try to reconstruct the ego's problem. The center of our interest is the ego's task of

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practical adjustment. We are interested in the ego's task of adapting its needs to the realities of the external world and of reconciling conflicting needs. The ego's ability to solve these problems will depend upon past experience. We attempt to reconstruct the problem of the ego in the light of the individual's past experience. In the light of the actual history of this individual, how must his problem look to the ego? In the light of past experiences what kind of understanding of the situation is possible? What would be the best possible solution, the best possible compromise between conflicting needs? Then having deepened our insight into the ego's problem by imagining what would be the correct solution if we were in the ego's place, we next compare the actual behavior of the individual with the ideal solution of his problem that we have reconstructed. In this way we gain an impression as to how the problem really looked to the ego, as to the character and adequacy of the practical insight that the ego was able to bring to bear upon its task.

At this point let us borrow a term from the experimental psychologists. From the individual's behavior we attempt to reconstruct just how a situation must have looked to the ego at a given moment, just what kind of a practical understanding the ego must have had of its task. This picture of the situation, this actual practical understanding of the ego's integrative task—this we shall designate as the 'psychological field.'

Exceptions to the Fundamental Similarity Between the Laws Governing Rational and Irrational Behavior

The fundamental insight upon which psychoanalysis is based was Freud's discovery that when put back into its proper emotional context even the most irrational neurotic behavior was found to have sense and meaning. From the very beginning up to the present day, this has remained the basic principle of psychoanalytic investigation—to try to understand irrational behavior in terms of the common-sense psychology of everyday life. The essential contribution of psychoanalysis has been to establish the principle that the psychological laws that enable us to understand rational behavior are also applicable to highly irrational behavior.

A few exceptions remain, however. I shall mention only two. One is the primary process, the highly bizarre and incorrect method of dealing with mental contents that is the distinguishing feature of the unconscious. Neurotic symptoms and dreams are found indeed to be understandable in terms of everyday psychology, but the thought processes that characterize the dream work and the mechanisms of symptom formation seem totally different from the ordinary processes of rational thinking.

In previous studies I have attempted briefly to illustrate the thesis that by studying the dream work in terms of the ego's practical grasp of its integrative task it is possible to reduce the differences between primary and secondary processes to a single quantitative principle. In the present study I shall first review very briefly the conclusions from these earlier studies and then attempt to apply the psychological field concept to a critical consideration of some of the theoretical assumptions underlying our views concerning psychoanalytic character types.

The Concept of the Psychological Field—Application to the Study of the Dream Work

In dealing with practical problems we think not in words but in terms of a practical grasp of the situation with which we are confronted. We are guided from moment to moment not so much by logical thoughts as by a sort of practical understanding of what we want and of the real situation that confronts us in trying to get it. This sort of practical understanding of our real situation in relation to our needs is what we designate by the concept of the psychological field.

The psychological field concept is also applicable to conflict situations. A conflict only makes our practical problem more complex. The intellectual task in such conflict situations is first to examine the reality situation with both goals in mind in order to determine to what extent the two wishes may be compatible with one another, to determine whether or not some compromise may be possible. This is obviously a more complex intellectual task than it would be merely to seek means to achieve either one of the two goals alone. To cite a psychoanalytic example, the little boy who is attached by sexual and tender bonds to both of his parents has obviously a more complex problem to solve than he would have if the father were merely a feared obstacle blocking the way to the boy's love of his mother.

Too intense a conflict not only increases the complexity of the ego's intellectual task of understanding the conflict situation but may also impair the ego's capacity for intellectual grasp. As an extreme example we may cite the proverbial tendency to 'lose one's head' in a crisis.

Under such circumstances it becomes impossible to grasp the complexities of the conflict situation. The ego must content itself with a much simplified, highly condensed version of the situation, or with the attempt to grasp just one small part of the total situation and then another and another in succession, in the way that Harold Lloyd on the screen progresses from one half-understood dilemma to another. In this way arise the peculiarities of the primary process which Freud has designated as the distinguishing feature of the unconscious.

In a recent paper I attempted somewhat sketchily to illustrate this thesis by applying the concept of the psychological field to the study of the dream work. I stated there that the language of the unconscious, when judged by the standards of logical thinking, is incorrect, strange, even bizarre; but that when understood in terms of its practical grasp of situations it becomes quite comparable to the practical thinking that dominates our everyday activity; that when studied from this point of view as an attempt to understand a practical problem, the peculiarities of the primary process resolve themselves into the consequences of a single principle: the need of the ego so to condense and simplify its grasp of the conflict situation as to bring its problem within the range of the ego's synthetic capacity. Indeed when we allow for this need for oversimplification, the symbolic language of dreams often astonishes us with the epigrammatic clarity with which it portrays the essentials of an emotional conflict.

Application to the Study of the Psychoanalytic Character Types

In a short paper published in 1908, Freud called attention to three groups of personality traits—orderliness, parsimony, and stubbornness—that are quite regularly associated with evidences of an 'intensified erotogenic significance of the anal zone in the innate sexual constitution.' These observations were extended by Sadger, Ferenczi, Jones, and Abraham and suggestions were subsequently made correlating other character traits with fixations upon other erotic zones—notably, dependent receptive and aggressive demanding tendencies with oral-erotic fixations and the capacity for unambivalent giving and for well-integrated social adjustments with the establishment of the primacy of the genitals.

For a long time the favorite explanation of these correlations was the one originally suggested by Freud, that the anal-erotic character traits, for example, developed by sublimation of or reaction-formation against hereditarily conditioned predominance of the anal zone in the erotic constitution. Thus the excessive emphasis upon orderliness and cleanliness is understood as a reaction-formation against overaccentuated interest in excrement and filth. Stinginess is explained as resulting from the transfer of libidinal interest from stool to money, and stubbornness as a defiant resistance against giving up this infantile interest in filth at the behest of the mother's attempts to train the child in cleanliness.

Numerous anecdotes, cited in the psychoanalytic literature, seem to put this explanation upon a very solid basis, in as much as they seem to prove conclusively that the enumerated anal character traits often do arise like neurotic symptoms either by direct sublimation of anal-erotic impulses or by reaction-formation against them.

Nevertheless, from other points of view this conclusion seems somewhat confusing. We are accustomed to think of an individual's character or personality as an organized system of behavior patterns that have arisen by progressive adaptation to external reality as represented chiefly by the child's relation to the parents. To discover that an individual's character is so completely dominated by an innate desire for stimulation of the anal mucous membrane seems now to rob this development of all adaptive significance. Psychosexual development is described as a biologically fixed succession of dominant erotic zones—first oral, then anal, then phallic—and now character formation seems to resolve itself into sublimation of or reaction-formation against the gratification of these partial, erotic impulses. We seem to get a picture of personality development as a sort of mosaic of unrelated traits derived from the independent activity of the different erotic zones. It seems obvious that this must be an extremely one-sided view of the process of personality development.

Already in Abraham's article on the anal character and still more so in his paper on contributions of oral eroticism to character formation, we see evidence that Abraham is struggling with this problem. In the paper on the anal character there is already a valuable hint as to how the very convincing evidence of the origin of anal character traits can be reconciled with our notion of personality development as a progressive process of adaptation. Abraham does not emphasize so much the increased significance of the anal zone in the inherited sexual constitution, but discusses much more fully the fixation of interest upon the anal zone as a consequence of the way that the training in cleanliness was managed. From this hint we may perhaps infer that for these patients who seem so fixed on the anal zone, the training in cleanliness actually constituted a traumatic experience which led to a fixation to this period of development. Under such circumstances it would not be surprising that the personality of these individuals should be so dominated by the partial erotic aim of the stimulation of the anal zone. The anal personality traits would have the quality of a stereotyped neurotic symptom rather than the adaptable character of a sublimation, and would constitute, like any neurosis, a restriction of the more freely adaptive character of normal personality development.

In the paper, The Influence of Oral Erotism on Character Formation, Abraham introduces another point of view that brings these observations still further into harmony with the idea of personality development as a progressive adaptive process. Nearly half of this paper is devoted to the discussion of dynamic interrelations between oral and anal eroticism and betwen the character traits associated with them.

Alexander in later studies has an increasing tendency to go still further in this change of emphasis. He is accustomed to describe the typical course of personality development from a strictly dynamic point of view as a process in social adaptation. Later he reformulates familiar psychoanalytic mechanisms in terms that avoid the implication of the libido theory. He makes the very interesting attempt to analyze psychodynamic mechanisms into typical 'emotional syllogisms' or patterns of dynamic interaction between different tendencies within the personality. In the emotional syllogisms that he enumerates and describes, a prominent rôle is played by the generalized 'vector tendencies,' receptive, eliminative and retentive which Alexander substitutes in place of the erotic zones and which group together tendencies of a 'similar direction,' for example, oral eroticism with the character traits ordinarily associated with it.

Especially in the concept of the emotional syllogisms does Alexander approach the psychological field concept which is the subject of the present discussion. The concept of the vector tendencies is valuable in focusing attention upon biological function rather than upon the erotic zone. By obliterating the distinction between the different tendencies within each vector group, however, it tends to obscure the question in which we are now interested, the question as to just what is the relation between the erotic zone and the character traits associated with it.

Returning to this question, if we wish to stress still more the integrated adaptive character of normal personality development, we might indeed raise the question as to whether the classical explanation of the association between personality traits and erotic zones should not be reversed. Instead of looking upon the personality trait as a sublimation of the partial sexual impulse, we might raise the question[1] as to whether, in normal development, the choice of one or another particular erotic zone may not be determined by the adaptive needs of the organism. Such a concept would indeed be helpful in explaining the fact that our patients' psychoanalytic material varies from day to day with emphasis now upon one and now upon another erotic zone in accordance with quite definite dynamic mechanisms. Only in cases of traumatic fixation, we might postulate, would the direction of causation be in the other direction, from erotic zone to character trait, in an attempt to master the traumatic memory.

ILLUSTRATIVE CLINICAL MATERIAL

It will be of interest to illustrate the problems discussed by reference to some clinical material. The material is from a middle-aged male patient under analysis for a gastrointestinal neurosis. After he had been in analysis for a number of months his funds were suddenly tied up by the banking moratorium. For a week he had been preoccupied with attempts to secure advances of credit from various acquaintances in order to continue his analysis, although the analyst had assured him that he would not be pressed for payment during the emergency. Under these circumstances he brings the following dream:

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[1] This suggestion has been most clearly formulated by Horney. It is already implicit in Alexander's explanation of disturbances in the receptive, eliminative and retentive bodily functions as results of the corresponding vector tendencies. The most consistent attempt to apply this point of view to concrete problems is probably the recent anthropological study by Kardiner in which he attempts to explain in detail the attitudes of different primitive peoples by reference to the nature of their childhood training and to the needs left unsatisfied in the social organization of each people studied. Landauer in a recent article has also emphasized the importance of a number of details of childhood training in the genesis of anal character traits.

> It was in X (where the younger of his two sons was born) and the patient was riding in a taxicab in the front seat. At first the driver was in the back seat. Then he also was in the front seat. The patient saw the machinery exposed on the footboard at the patient's side. He put his foot on it and got his foot caught momentarily in it. It seemed to slow up the machinery a bit. Then his foot was released. They went along familiar streets to Y Street near the office of the charitable organization of which the patient had been a director. There was where the woman was giving birth to a child. She was in an oven. Someone thought this was too hot for her. He said no, these were the proper conditions to facilitate birth.

The following are some of the more important associations. The oven reminds him of a crematory where he has seen the bodies of dead people. He recalls pictures of burial, a marble sarcophagus, capitals of pillars. He took his wife to the hospital in a taxicab when she was going to have her second child; but he believes the dream has to do not so much with the birth of his own younger child as with his own mother and the birth of his brother. The driver in the back seat suggests back seat driving. The patient once visited the town of X again after he had given up his work there and was taken to the office by a friend, Z, on a rainy night when the driving was somewhat dangerous. Z was an engineer whom the patient much admired. Putting his foot into the machinery suggests to the patient that his illness has thrown a monkey wrench into the machinery. . . . One of the contributors to the charitable organization lived on Y Street. Her name escapes him. She once told him that she had included a certain sum in her will to be given to the person in charge of the organization when she died. The patient has had dreams of going back to X and seeking to arrange for credit there.

The woman's feet in the oven are very thin like his mother's thin feet and legs. He speculates that if his mother were to die he would have the love of his father. He fantasies that his younger brother would die too. He imagines a small baby of repulsive appearance like a frog which becomes a fœtus in the middle stage of development. It reminds him of his brother. The brother is jovial and could get his mother to laugh as the patient was never able to do. The sarcophagus reminds him of an extravagant tomb he has seen. He thinks of his father's comment on the extravagant scale of his brother's living. . . .

The patient's wife was very ill following the birth of this second son.

She contracted an infection in the hospital. She had a woman doctor. Another doctor was consulted and performed a curettage, but still she did not improve until finally a third doctor was consulted who was successful with her. . . .

The analyst, who knows that the patient's wife is under analysis, suggests that he resents the expense of his wife's analytic treatment as he had this other time. The patient replies that he is certainly not conscious of such a feeling, but comments on his niggardliness, a trait which he has in common with his father and with all Scotch people. He adds that he does not take pleasure in giving Christmas presents as many people do. . . . He resents the refusal of funds by an organization to which he applied. . . . He pictures a man with his foot in a mire unable to move. The patient will have to manage somehow even if he can't get out. . . .

Later in the hour the patient recalls that Z pressed a bond into his hand at the time of the wife's illness, but that he, the patient, refused it.

This dream can be better understood by reference to a bit of the patient's early history. His mother had died when he was very young and after a time his father had remarried. The stepmother had soon won the little boy's affection by nursing him through a severe illness but this only increased his frustration and resentment when one year later a half-brother was born. The dream we have just quoted illustrates one of the ways in which he sought consolation for this severe emotional trauma. He turned away from the faithless stepmother to a deep unconscious feminine attachment to the father and tried to console himself with the father's often repeated statement that he had married the stepmother only to give the patient a mother. Apparently there was also something in the father's unconscious attitude that corresponded to this wish of the patient for, as the patient grew older, the father also objected to every one of the girls in whom the patient became interested and when the patient finally married, the father developed a neurosis. In other words, the patient's and the father's neuroses (whose symptoms were also rather similar) had something of the character of a *folie à deux*.

When his first child was born the patient seems to have identified himself with him; but the second child stirred up again all the old resentment that had been aroused by the birth of the half-brother. For a few years the patient staved off a neurosis by plunging energetically into his work. The neurosis finally developed when this attempt at compensation failed.

In the dream that we have presented for discussion the central theme is the patient's feminine wish towards the father which the patient has now transferred to the analyst. He is being taken by the analyst to the hospital as he himself took his wife to the hospital for the birth of their second child. This wish however is too masochistic. Just as he had wished his stepmother to die in childbirth, he now puts himself in the place of his own wife who nearly died under similar circumstances. He rejects this feminine masochistic solution and puts his foot in the machinery to slow it up a bit. The analyst is driving him too fast to the realization and living through of his masochistic wishes and the patient tries to slow up the process. When his resistance finally relaxes he has found another solution. He has projected his feminine wishes in the form of a woman whom he now repudiates and condemns to torture or death. The woman selected by the dream has obviously been chosen only for her symbolic significance and therefore can represent also the hated feminine rivals, stepmother and wife. With one stroke he can condemn to death both the feminine rival and the repudiated feminine part of himself.

Thus as we reconstruct the dream work we see the patient's ego attempting one possible outlet after another as a solution for his emotional dilemma. He would like to take the stepmother's place with the father and let the stepmother die in childbirth but neither the father nor the patient's conscience would tolerate that. He next attempts to bring these wishes into harmony with his father's and his own conscience by identifying with the stepmother in a suffering rôle, but this wish is too masochistic to be openly accepted by his ego. He struggles against it, tries to slow up the analysis and in this way achieves in the analysis an exceedingly condensed gratification of his wish for a masochistic relation to the father and of his narcissistic protest against it. He puts himself into a position where the masochistic gratification is forced upon him without having to acknowledge the wish for it.

In order to understand the implications of the ego's final attempt at a solution of his conflict it will be necessary to pay attention to a couple of allusions that we have not yet brought into consideration. He wishes his wife and his stepmother to die in childbirth. He also repudiates his own feminine and masochistic desires towards his father. All right! Let both wishes be gratified in the form of a woman who represents the hated women as well as his own repudiated femininity! But where is the gratification in all this? What satisfaction will the patient have, to take the place of the gratification of the feminine wishes he has repudiated? The answer to this question is revealed in the dream choice of the two figures who are to play the male and female rôles in the manifest content of the dream. The man who is driving the patient to the hospital is one who once offered the patient money. The woman who is to be cremated is one who once included the patient in her will. The attempted solution is plain. Instead of receiving a child from his father, he is to receive a gift of money. His mother and his own repressed feminine wishes shall die. In their place he will have money. Money is no rival, does not have to be pleased. By means of it one may hope to make oneself independent of the need for other people and to live in self-sufficiency.

But the patient's ego is still not through with this problem. In this dream we have again a confirmation of my often repeated thesis that dreams must take account of unwelcome realities. The patient has no money and even when it is proffered he already is so much in need of self-justification that he cannot put himself further under obligation by accepting it. When Mr. Z offered a bond he refused it and when the analyst offers to be lenient about pressing payment of his bill the patient cannot accept that either. Therefore the dream ends with a note of frustration and revenge. The woman who represents both his wife and the feminine side of himself in analysis will have it 'made hot' for her.

Personality Development as a Process of Progressive Organization and Adaptation

Thus in this dream, a random sample, we see most conclusive evidence for the fact that personality is no mosaic pattern of traits derived from different erotic zones. In this dream each of the three most important erotic zones, every one of the three vector tendencies, plays a rôle. The ego operates with the different erotic zones as a general operates with the units of his army, according to the strategic necessities of the campaign. When the separate army units begin to dominate the situation, then we have evidence of a high degree of disorganization. When we find such disorganization in the personality we call it a neurosis or a psychosis.

Even the concept that the integrated behavior of the organism is the result of a sort of equilibrium between 'elementary' vector tendencies probably takes too little account of the central integrating influences in shaping normal behavior. Generalized vector tendencies not yet directed towards concrete objects are convenient abstractions but probably do not exist in real life and certainly not as 'elementary' biological tendencies. Even a basic drive like hunger craves a particular kind of real object, food, not just to receive something.

Every sort of activity involves many subsidiary processes which might be classified in part as receptive, retentive and eliminatory, but which include also many other more specific processes. Let us take for example a factory which receives raw materials and tools, retains these materials during their process of elaboration and finally disposes of the finished products. Other raw materials may be retained for future use and even waste materials and finished products may be retained for a time before they can be properly disposed of. It would be obviously absurd to speak of receiving, retaining and eliminating as 'fundamental tendencies' of the factory, or to think of the integrated activity of the factory as the result of a dynamic equilibrium between receptive, retentive and eliminatory 'tendencies.' Quite obviously such 'tendencies' are only subordinate parts of the total integrated activity. If at any time the taking in of raw materials or holding them or getting rid of them become ends in themselves, this would obviously be evidence of a disintegration or disorganization of the normal activity of the factory.

Similarly in the organism it is misleading to speak of vector tendencies as 'elementary' biological tendencies. Nor is it a matter of indifference what is received or retained or eliminated. What shall be taken in or retained or disposed of will depend both upon the nature of the total integrated activity and also upon the phase of development of that activity (nearness to completion, etc.) in relation to the relevant external situation. In other words, in normal behavior, receiving, retaining and eliminating are merely subordinate parts of a more highly integrated activity which can be understood only in relation to a total psychological field. When this more highly integrated activity becomes disorganized however, as in dreams and neuroses, then the impulses that previously were part of an integrated pattern become dissociated and displaced upon objects that have merely a symbolic value. It is in this way, as I understand it, that the so called 'vector tendencies' arise as products of disintegration of more highly integrated patterns of adaptive behavior. This view I would offer in contrast to the concept that seems to underly much of our present psychoanalytic thinking—the concept that the integrated adaptive behavior of the organism somehow arises by combination of or by dynamic equilibrium or interaction between pre-existing 'biological tendencies' or erotic zones. This more usual view I believe takes too little account of the central organizing influence of the biological and psychological fields that constitute the integrative function of the ego.

We may perhaps best conclude by a necessarily schematic suggestion as to the real significance of the psychoanalytic character types when translated into a language that takes adequate account of the dynamic, adaptive and organizing process in the development of personality. Briefly characterized, the oral character deals with life in terms of elementary primitive self-preservative urges which confront him either with the helpless dependence of the human infant or with the primitive dangers of the jungle. The genital character is oriented about the task of integrating one's own needs to the needs of other people. This is a complex and rather unstable form of organization and requires modification or inhibition of elementary self-preservative urges in deference to the needs of others. In order to be able to take into account the needs of others it is necessary to be able at times to project one's needs and accept vicarious in place of direct gratification. Guilt reactions and masochistic behavior are the result of failures in this attempt at social integration. The anal character attempts to avoid both the dangers of the jungle and the complex task of social integration by becoming self-sufficient and living in an impersonal world in which people are treated as things and everything is subjected to impersonal laws.

I must warn you, however, that every personality is different and that this brief summary of development that I have just presented is merely a schematic outline.

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A DYNAMIC INTERPRETATION OF PSYCHOTHERAPY ORIENTED TOWARDS RESEARCH *

by

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ONE discerning member of the psychiatric profession has said that psychotherapy is the art of applying a science which does not yet exist. A perusal of the more recent books on the subject, for instance, those of Prinzhorn, Diethelm and Schilder, impresses one with the perspicacity of this definition in spite of the fact that these books are definitely superior to anything that has yet been written on the subject of psychotherapy.

For a psychologist to raise his voice under these circumstances is certainly hazardous. The limitations of his Ph.D. are apparently obvious even to young children—to judge from my own experience: a little niece of mine once introduced me to a playmate of hers by explaining proudly that I was a doctor, and then added in the name of perfect honesty "but not the kind that makes people better."

Forewarned of the dangers, then, you will be able to follow me with the necessary caution. In presenting my remarks I shall first refer briefly to certain implicit common factors which seem to be present in nearly all methods of psychotherapy and which, to the eye of the psychologist, represent certain possible points of attack for research in connection with the whole problem. In the second place an attempt will be made to divide these common factors on broad lines, special attention being paid to recent psychological work which seems of significance in this context. Finally one particular factor under the general division will be singled out for more detailed consideration.

THE IMPORTANCE OF IMPLICIT COMMON FACTORS IN DIVERSE METHODS OF PSYCHOTHERAPY

It has often been observed that every form of psychotherapy has cures to its credit. Proponents of psychoanalysis, treatment by persuasion,

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Christian Science and any number of other psychotherapeutic ideologies can point to definite successes. The implication of this fact is not, however, univocal. Having achieved success in the cases he mentions the proud proponent is very apt to imply, even when he does not say it, that his ideology is thus proved true and all others false. More detached observers, on the other hand, surveying the whole field, tend to draw a very different conclusion to which they seem coerced by accepted principles of logic. For, they reason, if such theoretically conflicting procedures can lead to success—often even in similar cases—therapeutic results cannot be a reliable guide to the validity of theory.

When one is thus prodded it requires but little reflection to realize that the effective factors in any form of psychotherapy are not necessarily those upon which its proponents insist. Unrecognized factors play a part and among these there may be more that is common than is different.

Turning to such possible implicit common factors the following list of suggestions may be offered:

1. Reconditioning of social relationships—a factor present in any psychotherapeutic situation by virtue of its social character.

2. Catharsis—which presumably can occur in almost any form of psychotherapy that uses verbal expression.

3. The indefinable effect of the therapist's personality—which is always present and probably exercises the most significant, though as yet undetermined, influences. Since no method of therapy has a monopoly on all the good therapists, this is another common factor potentially implicit in apparently diverse methods of treatment.

4. The faith of the patient in the therapist—a factor long recognized as being of importance in almost any sort of re-education.

5. Another common factor, which is somewhat more complex, may be summarized under the heading of the *function of interpretations*. If it is true that mental disorder represents a conflict of disintegrated personality constituents, then the unification of these constituents by any systematic ideology, regardless of its specific nature, would seem to be a prerequisite for successful treatment. Whether the therapist talks in terms of psychoanalysis or of Christian Science is, from this standpoint, relatively unimportant so long as what he says has a certain *inherent formal consistency* which gives the patient a schema for achieving that personality organization which he lacks. Since most forms of psychotherapy are based upon a systematic set of beliefs or theories about human personality, they all have this common possibility of providing a basis for reintegration.

6. There is a further aspect to the function of interpretations. Psychological events are so complex and many-sided in nature that they

may well be *alternatively formulated* with considerable justification for each alternative. Thus any interpretation is apt to have a certain amount of truth in it, applying at least from one standpoint or to one aspect of the complex phenomenon being described. Moreover, it is generally recognized that personality represents an *interdependent organization* of dynamically related constituents. With this kind of organization it is impossible to change any constituent without affecting the whole, for the modification of any part entails reverberations throughout the rest. The conclusion would then be warranted that in attempting to modify the structure of a personality it would matter relatively little if the approach were to be made from the right or the left, the top or the bottom, so to speak, as long as some significant point were attacked; in the end the initial effect would alter the total organization anyway. Thus is added another implicit common factor overlooked when diversity of interpretations is stressed.

HABIT MECHANISMS *vs.* MOTIVATIONAL DYNAMISMS

The foregoing discussion is intended not so much to present an exhaustive list of the implicit common factors in different methods of psychotherapy as to emphasize the importance of recognizing and studying them.[1] Let us turn now to a certain broad division of psychotherapeutic factors according as these seek chiefly to change either *habit mechanism* or *motivational dynamisms.*

From the standpoint of the modification of habit mechanisms psychologists have done a considerable amount of work in remedial reading and speech defects such as stuttering. Moreover, they have contributed certain new techniques such as the negative practice methods of Knight Dunlap[2] according to which bad habits are paradoxically broken by actually practicing them instead of avoiding them, the underlying assumption being that in this way the habit is satiated or comes under voluntary control and may thus be integrated with the rest of the conscious personality.[3]

Another psychotherapeutic device recently contributed by psychologists is the special sleeping arrangement described by Mowrer and Mowrer[4] and by J. J. B. Morgan[5] for use with enuretic children. Their method is based upon the theory of conditioning and attempts to bring about a cure of enuresis by associating with the cues for the exercise of the bad habit certain stimuli involving a new adjustment. Concretely the technique consists in arranging for the automatic ringing of a bell as soon as the mattress on which the child is sleeping begins to be wet. Once aroused in this way the child completes the urination in accordance with his waking habits.[6]

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[1] Hadley, John M., Various Roles of Relaxation in Psychotherapeutics. *J. Genetic Psychol.* (1938) 19:191–203.

[2] Dunlap, Knight, *Habits: Their Making and Unmaking;* New York, Liveright, 1932 (x and 326 pp.).

[3] It has been suggested that this method of treatment is especially designed to achieve good results with negativistic individuals.

[4] Mowrer, O. H., and Mowrer, W. M., Enuresis: A Method for Its Study and Treatment. *Amer. J. Orthopsychiatry* (1938) 8:436–459.

[5] Morgan, J. J. B., Treatment of Enuresis by the Conditioned Reaction Technique (abstract). *Amer. Psychol. Assoc. Program,* 1938, 10.

It is interesting to compare the Mowrer-Morgan method with the negative practice procedure of Dunlap. These are similar in that they do not inquire far into the dynamics or underlying motivation of the habits which are to be extinguished. In one sense, therefore, both of them are symptomatic treatments—but it must be recognized, contrary to certain current opinion, that this fact does not necessarily invalidate them. There are a number of situations in which habits have already outlived their dynamic meaning and may even have originated in a process of dissociation of a rather mechanical nature. In instances such as these the habit probably exists almost purely as a kind of associative parasite and simply needs to be discouraged or to be brought under conscious control in order to be eliminated. Since it serves no motivational purpose, this purpose does not have to be stressed for the treatment to be effective.[7]

There are, however, many undesirable forms of behavior in which the motivational aspect cannot be neglected. In fact most behavior disorders represent a composite problem in habit mechanisms and motivational dynamisms. Recently, for example, reading disabilities and similar school failures have been shown to be dependent in certain cases upon dynamic factors. More obviously motivational in import are the types of disorder with which the psychoanalysts have been particularly preoccupied. In these instances the dynamic background, the emotional significance of the behavior, looms large and must be dealt with in its own right if the illness is to be treated with any hope of permanent success. The effort must then be made to supply insight or otherwise bring about a change in the organization of the personality, and to provide an acceptable substitute form of gratification for the underlying frustrated drives. From this standpoint the ego-defenses and other motivational dynamisms which give life to the disordered behavior must be regarded as serving a definite biological purpose which under the given conditions of the organism cannot be fulfilled more adequately.

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[6] Mowrer, O. H., and Mowrer, W. M., The Meaning and Management of Crying. *Child Study* (1938) 15:104–107, 127.

[7] In this connection the recent book of Shaffer, L. F., *The Psychology of Adjustment;* Boston, Houghton Mifflin, 1936 (xix and 600 pp.), which bears the sub-title *An Objective Approach to Mental Hygiene* and attempts to bring the concepts of conditioned reflexology to bear upon the problems of psychotherapy, is a noteworthy contribution.

Only a change in the efficiency of the personality, a redirection of psychic energy, can modify the undesirable forms of behavior.

Frustration Tolerance and Psychological Immunology

At this point is encountered a movement which has gained a considerable impetus within recent years—a movement which is oriented towards frustration in all of its ramifications and from this center of reference seeks to validate, sharpen, and systematize certain of the concepts of dynamic psychology, especially psychoanalysis, by experimental procedures.[8] In keeping with this work and the point of view represented in it, an attempt may be made to indicate what appears to be the most important implicit common factor of a *dynamic* sort in various psychotherapeutic procedures.

Central to this interpretative hypothesis is the concept of frustration tolerance, defined as the capacity to withstand or resist frustrating situations without resorting to inadequate modes of adjustment. Individuals presumably differ, either constitutionally or as a result of experience, in the degree to which they possess this capacity. It would be easy to make it plausible that the educational process in childhood, especially as related to discipline, consists largely in the building up of frustration tolerance or the encouragement of its natural maturation. The psychoanalysts have discussed this sort of development in terms of a transition from the primary to the secondary functions or from the pleasure to the reality principles, but the concept of frustration tolerance seems preferable because it is quantitative rather than dichotomous and has definite experimental implications.

From the point of view of frustration tolerance certain of the concepts of immunology which have proved so fruitful in the study of infectious diseases are profitably recalled. It is well known that protection against infection, i.e., immunization, may be either active or passive. In the active type of immunization the procedure is to give the patient small or tolerable doses of the bacterium in question. Over a prolonged period of time the drug is artificially administered till the person gradually builds up immunity in the form of certain antitoxins or antibodies. In this process of vaccination, it is, of course, dangerous to give too much of the antigen because if that is done, an attack of the full-fledged disease may be precipitated. Immunization of this active type—active in the sense that the individual builds up in his own body the necessary protective forces for fighting the disease—often lasts for many years, if not for the duration of life. Closely related to active immunization is allergic or anaphylactic desensitization—a process in which a person who has developed a special hypersensitivity to some foreign protein is gradually desensitized by being given tolerable does of this allergen.

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[8] Rosenzweig, Saul, *Frustration as a Basis for Experimental Psychopathology,* a forthcoming publication; in condensed form, Frustration as a Coordinating Concept in Experimental Psychopathology. *Report N. R. C. Conference on Experimental Neuroses and Allied Problems.* 1937, pp. 38–43 (privately distributed).

On the other hand, there is a form of immunization described as passive in which not the pathogen or microbe in any of its forms but the antibodies or antitoxins themselves are administered to the patient after these have been elaborated in the blood of some other human or animal. For example, serum from horses which have been actively immunized against tetanus may be given as an immediate protection to individuals who have suffered cuts or bruises. Under these conditions, however, the immunity developed is usually short-lived, lasting perhaps for only a week or two, and needs to be repeated if further protection is required.

Now in "psychological immunology," so to speak, active immunization is exemplified in the normal educative process of the child who little by little is taught to endure more and more frustration, the frustration itself being regulated in accordance with his ability to stand it. As in physical immunization, care must be taken not to frustrate the child beyond his capacity lest a complex (and neurosis) be thus engendered.[9] What is meant by a mature, well-developed personality is largely to be understood in terms of the ability to tolerate frustration, protection having been gradually built up against inadequate responses to frustrating situations. The normal individual has a generalized high level of frustration tolerance whereas the neurotic has certain specific areas of low frustration tolerance, called complexes, and the psychotic has either many such areas or a generalized low frustration tolerance.

One of the great advantages of these immunological concepts is their applicability to both education and re-education. Turning now to re-education or psychotherapy, psychoanalysis or methods closely related to it seem to provide further examples of "active immunization" or "desensitization." During psychoanalytic treatment by free association the analysand, or patient, is encouraged to express his frustrations over and over again without resorting to the ego-defenses which he employs in everyday life. The chief rule of analysis is that no association, however unpleasant, is to be denied expression. The patient is thus constantly being frustrated since instead of gratifying his self-protective tendencies he is always mentioning derogatory or humiliating things about himself.

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[9] One might consider here the relevance of "sensitization," which is of such great significance in anaphylaxis or allergy and from which standpoint the "sensitive" personality is interestingly viewed. As a matter of fact the recent forms of psychiatric treatment by shock—severe frustration—have been interpreted as anaphylactic desensitization. Pascal, Constanz, and Davesne, Jean, *Traitement des Maladies Mentales par les Chocs;* Paris, Masson, 1926 (xv and 182 pp.). A more psychobiological view, with emphasis upon the general concepts of frustration and defense, may be found in Rosenzweig, Saul, "*Shock*" *Treatments in the History of Psychiatry,* in preparation.

But it will readily be seen that when a person has been made to speak out for an hour a day over a period of a year or more frustrating situations which have incapacitated him in the past and are reducing his efficiency at the present time, he will become gradually resistant; his tolerance for these frustrations will be built up. To consolidate these gains the analyst interposes judicious interpretations which provide insight and prepare the ground for growth. Insight is hence to be regarded as closely allied to frustration tolerance.

As indicated previously with regard to active immunization in the infectious diseases, psychoanalysis in any of its forms, i.e., re-education in which frustration tolerance is gradually built up, really modified the structure of the personality and may thus provide lasting protection. Consider now the psychological analogue to passive immunization against infection which usually lasts for a brief time. It will be recalled that this type of immunity comes, not by exposing the person to the pathogen, but by implanting in him antibodies or antitoxins which have been first developed in the body of some other organism. In other words, the attempt is made to impart to the patient a protection which he takes over ready-made from some other individual instead of elaborating it himself. Psychologically one thinks here immediately of hypnotism, suggestion and persuasion—all of which attempt in common to treat disorders by a sort of frontal attack. It is not difficult to appreciate, however, that such procedures, like their analogues in the infectious diseases, cannot have lasting effects because the suggestions or insights which are intended to cure the patient have not been elaborated by the patient himself but are transplanted, as it were, from the understanding mind of the therapist, where they may have developed organically, into the unprepared mind of the patient. The therapist may indeed understand the reason for the presented symptoms and his suggestions may be quite adequate in an intellectual way to combat it; but since these insights and interpretations come from the education and experience of the therapist rather than from those of the patient, they can do little good and certainly little lasting good. In the same vein analysts have long insisted that suggestion and hypnosis are quite ineffectual as compared with psychoanalysis itself.[10]

At this juncture a doubt might well arise as to whether the comparison between somatic and psychological immunization is to be regarded as anything more than a verbal analogy. To consider this problem in detail would take us too far afield but one or two suggestions may indicate the trend of the answer. For one thing, there is the fact that analogy is not such a bugaboo as we are apt to believe in our more reactionary moments. Sound analogy is after all the basis of scientific generalization—a fact readily appreciated by recalling that a considerable part of physics rests upon an analogy between an apple and the moon. But in terms of psychotherapy itself, it is well to recognize that the concept of defense as employed in psychopathology is an extrapolation from previous uses of this concept in the theory of medicine. While the infectious diseases involve *cytological or immunological defenses,* at another level *autonomic or emergency defenses,* as portrayed in Cannon's work, and at a still more complex one *cortical or ego-defenses,* as outlined by Freud, complete the picture. It should not therefore surprise us if certain of the paradigmatic concepts of immunology, referring as they do to general mechanisms of adaptation—a fact which Metchnikoff[11] himself pointed out—were found to apply beyond the sphere in which they were first put to use. Should this be the case a considerable integration and simplification of scientific facts would have been achieved. For, after all, if the analogy is sound, infection would have to be regarded as one kind of frustration and antibody formation as one variety of frustration tolerance. But whether it is sound can be determined only after the concepts of psychological immunology and frustration tolerance have been studied in their own right and established in their own terms. It is with the need for such investigation in mind and with the hope of stimulating it that the foregoing hypothetical interpretation of the therapeutic process has been attempted.

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[10] Milton H. Erickson's recent recommendation that hypnosis be used for prolonged re-education rather than for treatment by suggestion seems calculated to reduce the above distinction between psychoanalysis as an active and hypnotism as a passive form of immunization. Round Table, Experimentation in Hypnosis. American Psychological Association Program, 1938.

One final warning must be sounded with regard to this interpretation. It would be a mistake to conclude from the above emphasis upon frustration tolerance that other factors are being overlooked. It was pointed out earlier that this factor was being selected for special discussion; let it now be stressed that this factor is not the only one to be considered in psychotherapy. Even from the point of view of frustration alone, one would obviously need to take into account the possible modification of those *frustrating situations* to which the individual might be reacting; in addition, the direct treatment of certain types of *reaction to frustration* might be indicated. The previous exposition has thus plainly and intentionally been restricted in scope.

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[11] Metchnikoff, Elie, *Immunity in the Infective Diseases;* Cambridge, Cambridge University Press, 1905. Page 565: "We can become habituated more or less easily to all kinds of violent sensations. Light and very intense noises which, at first, excite exaggerated reflex actions are ultimately perceived without setting up the least movement. Even in the psychical sphere habit dulls painful feelings, and it is very probable that a whole gamut of adaptation, starting from unicellular organisms which accustom themselves to live in an unsuitable medium, up to cultured human beings who habituate themselves to a disbelief in human justice, will be found to rest upon one and the same fundamental property of living matter.

"Regarded from this point of view, immunity becomes a very general phenomenon, passing far beyond the resistance offered by the animal to infective diseases."

SUMMARY

In this paper it has been pointed out that the various methods of psychotherapy have a number of implicit factors in common which are probably more important than their mooted differences. An attempt has been made to demonstrate further that these common factors are calculated to modify either habit mechanisms or motivational dynamisms, the one or the other being the more relevant depending upon the particular case. Finally, that one of the dynamic factors which is presumptively the most significant, namely, frustration tolerance, has been singled out for special discussion. In the course of this exposition it has appeared that the concepts of somatic immunology are remarkably paralleled in psychotherapy. Throughout the paper the urgent need for pertinent research has been recognized.

THE LANGUAGE OF PHANTASY: III. THE LANGUAGE OF THE PHANTASIES OF PATIENTS WITH CONVERSION HYSTERIA, ANXIETY STATE, AND OBSESSIVE-COMPULSIVE NEUROSES*

by

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A. INTRODUCTION

IN a previous study (Masserman and Balken) of the phantasies of neurotic and psychotic patients it was shown that not only did the phantasies reveal many of the important unconscious psychodynamisms of the patient's neurosis,[1] but also that the style, structure, and other formal characteristics of the productions were often directly indicative of the predominant features of the mental status of the subject investigated. Thus, in our original study, we were led to certain impressionistic formulations of these criteria, such as (*a*) that conversion hysterics produced phantasies which were "flippant . . . and frankly sexual," (*b*) that the phantasies of patients with marked anxiety were "characterized by moving, dramatic situations and intense, comparatively clear-cut conflicts" and (*c*) that in the productions of obsessive-compulsive patients there was "a pervading uncertainty—a sort of fruitless, querulous indecision in which 'perhaps,' 'maybe' . . . or equivalent expressions are common." It is our purpose in the present report to present a more specific analysis of these and other formal aspects of the language of phantasy and to discuss briefly the psychological and clinical significance of our findings.

B. METHOD

As in our previous study, 50 patients were presented with 20 test pictures[2] in succession and the phantasies they constructed about the situa-

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[1] The patient, in his responses, "(*a*) identifies with various characters in his phantasy, each of whom then personifies a different aspect of, or force in, his own personality, (*b*) puts these *dramatis personae* in situations that symbolize his own intra-psychic conflicts and then (*c*) solves these situations in ways that, perhaps, he would like his own unconscious conflicts to be solved" (Masserman and Balken).

[2] Morgan-Murray test cards obtained from the Harvard Psychological Clinic, Cambridge, Massachusetts.

TABLE 1

Criteria for the Analysis of the Language of Phantasy

CRITERION*	SIGNIFICANCE
1. The average number of words per phantasy.	A measure of the length, if not the richness, of the productions.
2. The number of predicative, participial and attributive adjectives.**	The relative wealth of static description in the phantasy.
3. The relative number of active, passive and intransitive verbs.***	A high incidence of verbs denotes a kinetic release in the phantasy of anxious tensions in the narrator.
4. The relative frequency of (*A*) "Pro" statements, subdivided into: (*a*) Possibility: "this is possible," "conceivable," "it stands a chance," etc. (*b*) Probability: "thinks likely," "to be expected," "appears to be," etc. (*c*) Certainty: "positive," "sure," "no question," "inevitable," etc.	"Pro" statements indicate relative ability of the subject to make straightforward statements with relatively little overt doubt and self criticism.
—as contrasted with (*B*) "Con" statements, such as: (*d*) Impossibility: "incredible," "unimaginable," "unthinkable," etc. (*e*) Improbability: "not likely," "I don't think," "chances are against," etc. (*f*) Uncertainty: "afraid to say," "wonder whether," "I don't know," etc. (*g*) Qualifications: expressions indicating limitation, modification or reservation concerning an assertion.	"Con" statements reveal obsessive ambivalences, doubts and defensive denials made by the subject with reference to the material appearing in his own phantasies.
5. Incidence of expressions of conative alternatives, equivalences or vacillations.	Related to the difficulties and ambitendencies encountered by the subject in his attempt to represent and resolve his conative conflicts in his phantasies.
6. *Zwang* expressions, either felt as "I have to," "I must," or projected as "he is forced," "she finds it necessary."	Compulsive tendencies in the subject's thinking.
7. Number of questions asked of the examiner during the test.	Variable; cf. discussion in text.

TABLE 1 (*continued*)

CRITERION*	SIGNIFICANCE
8. Special expressions, such as (*a*) Vagueness: "sort of," "kind of," (*b*) Reasoning: "because," (*c*) Derivation: "as a result," (*d*) Means: "this is how," etc., (*e*) The special interjection "well."	Cf. discussion in text.
9. Number of occurrences of (*a*) The first personal pronoun, and (*b*) Direct reference to the narrator: "it seems to me," "the way I see it," "I would say," etc.	Measures of the egocentricity or re-introjection of the subject's imagery.
10. Identification of a character in the phantasy with the narrator: "this might be I," "just like my own story," etc.	Manifest instances of more direct and conscious projections of the subject into his phantasies.

* Among the criteria discarded for the purposes of the present study because they were found to have insufficient determinative value or because they involved too great a degree of subjectivity in interpretation and scoring were the following: (*a*) the classification of the phantasy as narration, essay or description; (*b*) the number of separate "ideas" or "elements" in the production; (*c*) the frequency of repetition of thoughts, phrase patterns, plot or other configurations as a measure of "perseveration"; (*d*) the use of metaphors, metonymy or synecdoche; (*e*) the differentiation of "concrete" and "abstract" statements as an indication of "schizoid thinking"; and (*f*) the scoring of voice, gesture, and facial expressions (e.g., laughter, tears, gestures of annoyance, derision, hopelessness, etc.).

** The adjective count included participial adjectives preceded by the article *the* or *a* or by the preposition *of*, but nouns used as adjectives, adjectives used as nouns (e.g., *the wealthy, the idle*), quantitative and ordinal numerals and "numeral pronouns" (*next, many,* and *several*) and the adjectives *certain, various,* and *different* were not counted.

*** Verbs in all forms, including infinitives and participles, were counted. Participles used without nouns and preceded by an article—*the* or *a*—or by the preposition *of* and auxiliary verb (e.g., *have, shall,* etc.) were not counted.

TABLE 2

IN ADDITION TO THE CRITERIA LISTED IN TABLE 1, THE FOLLOWING INDICES WERE FOUND TO HAVE INDIVIDUAL SIGNIFICANCE

INDEX	ABBREVIATIONS OF QUOTIENT	DERIVATION (cf., Table 1)	SIGNIFICANCE
Verb-adjective quotient	V-Aq	$\frac{\text{Total number of verbs}}{\text{Total number of adjectives}}$	High values connote restless, forceful, dramatic action in the phantasies, expressing libidinal tensions and anxiety in the subject.
Pro-con quotient	P-Cq	$\frac{\text{Expressions of possibility and probability}}{\text{Expressions of impossibility and improbability}}$	High values evidence smoothness of narration corresponding with superficial emotional equanimity in the subject (as, for instance, in conversion hysteria).
Certainty-uncertainty quotient	C-Uq	$\frac{\text{Expressions of certainty}}{\text{Expressions of uncertainty}}$	High values indicate emotional or defensive positiveness of assertion.
Qualification-certainty quotient	Q-Cq	$\frac{\text{Expressions of qualification}}{\text{Expressions of certainty}}$	High values express obsessive hesitation, doubt and self-criticism.

tions depicted in each were recorded verbatim. Fifteen patients of uniformly high intelligence (*IQ* 118–138) were then selected in groups of five so that each group fitted most closely the respective clinical characteristics of conversion-hysteria, anxiety state, and obsessive-compulsive neurosis. The phantasies of these 15 subjects were then analyzed according to 85 trial criteria, each of which was empirically tested; of these criteria, 10 were then selected as being most objective and significant (Tables 1 and 2).

C. RESULTS

When the three main neurotic reaction types were investigated according to these criteria (cf., Tables 3 and 4), certain characteristic differentiations appeared which may be stated and interpreted briefly as follows:

In *conversion hysteria* the characteristics of the phantasies are: productions of medium length, a plethora of leisurely descriptive material with little forceful action (low verb-adjective quotient), little vagueness, ambivalence or qualification of statement (high pro-con quotient as contrasted with low certainty-uncertainty and qualification-certainty quotients and with low alternative and "special expressions" ratings), and a minimum use of the first person or of identifications with the narrator. It is of great theoretical interest that these formal characteristics of the phantasies are consistent with the most striking psychodynamic mechanisms of the conversion hysteric; namely, the diminution of overt anxiety by the device of "converting" the repressed erotic or aggressive urge into organic dysfunctions which afford vicarious libidinal gratification and yet are sufficiently self-punitive to resolve in some degree the accompanying neurotic guilt. With his intrapsychic tensions thus autoplastically relieved, the conversion hysteric apparently can then indulge in rich, slow-moving, leisurely phantasies which need exhibit but little action or indecision and which are so lightly charged with projected anxiety that there are almost no direct references to the patient's own difficulties in the stories. Significant also is the fact that there is a corresponding minimum of interpersonal tension in the test situation, as shown by the freedom the patient feels in asking relatively casual questions of the examiner.

In contrast, the phantasies in an *anxiety state* are brief; the action is most dramatic (highest verb-adjective quotient) and often compulsive; alternatives of conation are most frequently sought; special expressions connoting vagueness, hesitation, and trepidation are freely used; and direct identifications of the narrator with characters in his phantasy frequently occur. These characteristics of the language of the phantasies are in agreement with the circumstance that in neurotically anxious subjects the intrapsychic tensions have been relieved neither by autoplastic conversion nor by an obsessive-compulsive ritual, and therefore seek expres-

TABLE 3

Criteria for the Differential Analysis of the Phantasies of Neurotic Patients

TYPE OF NEUROSIS	CONVERSION HYSTERIA	ANXIETY STATE	OBSESSIVE-COMPULSIVE
1. Words (Av. no. per phantasy)	177	107	213
2. Adjectives (per 100 words)	8.40	4.00	6.55
3. Verbs: *a.* Active voice	4.99	4.79	5.47
b. Passive voice	.78	.70	.56
c. Intransitive	5.54	6.96	8.17
Total	11.31	12.45	14.20
V-Aq Verb-adjective quotient	1.35	3.11	2.17
4. Form of proposition:			
A. Pro: *a.* Possibility	.70	1.45	1.03
b. Probability	.77	1.69	1.21
Total	1.47	3.14	2.24
B. Con: *d.* Impossibility	.13	.50	.78
e. Improbability	.09	.27	.14
Total	.22	.77	.92
P-Cq Pro-con quotient	6.7	4.1	2.4
c. Certainty	.63	.53	.45
f. Uncertainty	.18	.29	.67
C-Uq Certainty-uncertainty quotient	3.50	1.83	.67
g. Qualifications	1.25	2.68	3.69
Q-Cq Qualification-certainty quotient	1.99	5.01	8.20
5. Alternatives	.44	.76	.54
6. Compulsions	.12	.36	.36
7. Questions	.73	.52	.12
8. Special expressions *a.* Vagueness	0	.73	0
b. Reasoning	.18	.45	.57
c. Derivation	.08	.06	.32
d. Means	.06	.02	.19
e. Interjections	0	.40	.03
9. *a.* First person	1.07	2.49	2.63
b. References to narrator	.16	1.13	1.04
10. Identification with self	0	.47	.21

TABLE 4

COMPARISON OF DIFFERENTIAL SCORES WITH ANXIETY STATE RATED 100

TYPE OF NEUROSIS		CONVERSION HYSTERIA	ANXIETY STATE	OBSESSIVE-COMPULSIVE
1. Words		165	100	*199*
2. Adjectives		*210*	100	164
V-Aq	Verb-adjective quotient	43	*100*	69
P-Cq	Pro-con quotient	*163*	100	58
C-Uq	Certainty-uncertainty quotient	*191*	100	37
Q-Cq	Qualification-certainty quotient	39	100	*164*
5. Alternatives		58	*100*	71
6. Compulsions		33	*100*	*100*
7. Questions		*140*	100	23
8. Special expressions:	*a.* Vagueness	0	*100*	0
	b. Reasoning	40	100	*127*
	c. Derivation	133	100	*533*
	d. Means	300	100	*950*
	e. Interjections	0	*100*	8
9. *a.* First person		43	100	*105*
b. References to narrator		14	*100*	92
10. Identification with self		0	*100*	45

sion in vivid, dramatic, incompletely projected phantasies. These productions, however, are themselves cut short by the immediacy of the affective symbolism employed, so that the phantasied situations are left as unresolved as the underlying emotional conflicts of the subject. Consistent with this the patient, in his reaction to the test situation, often substitutes facial expressions and body gestures for his inhibited verbal language, or else asks anxiety-cathected questions of the examiner.

In *obsessive-compulsive* neuroses a somewhat similar language syndrome appears, with the highly characteristic modification that the necessity (highest score on "compulsions") the patient feels to rationalize and elaborate the many ambivalences and uncertainties reflected in his phantasies (highest qualification-certainty quotient; extensive use of "special expressions" and lowest pro-con and certainty-uncertainty quotients) greatly increases the average length of his productions. Theoretically, these features are again in accord with the psychodynamic pattern of the obsessive-compulsive neuroses, in which latent anxiety frequently breaks through the typical defenses of vacillation, doubt, obsessive rationalizations, and meticulous ritualism of thought and action. It is not surprising, therefore, that the obsessive-compulsive phantasies show a high verb-adjective quotient, a high self-identification factor, and in other ways (cf., Tables 3 and 4) manifest the dynamically close relationship of this neurosis with an anxiety state.

D. Discussion

1. *Review of the Literature*

Piaget, from an ontogenetic standpoint, has demonstrated the relationship of the forms of language with the mental development of the individual. Sapir has pointed out that, despite the inadequacies and limitations of ordinary language for the communication of affect ("emotion, indeed, is proverbially inclined to speechlessness"), an individual's language is in subtle ways peculiar to him and an unmistakable signature of his personality. In confirmation of this, Allport, Walker, and Lathers found that the written productions of college students could be matched and accurately identified by the characteristic style of each subject; however, these authors denied the possibility of formulating adequate criteria for the specific analysis of language.

Psychoanalytic theory, concerned rather with the motivations than with what Sapir calls the "outer layer" of language, has adopted a more dynamic formulation. Freud pointed out the meaning of slips of the tongue as early as 1904, and analysts have since learned to recognize the significance not only of the content but also of the forms of expression used by their patients. In discussing this point with reference to dreams, Sharpe writes:

> The value of a dream therefore lies not only in discovering the latent material by means of manifest content, but the language used in the narration of dreams and in the giving of associations will itself help toward elucidation. . . . To take full advantage of this we need to remember that words will not only carry a secondary meaning, but implicitly also a primary one.

With regard to the emotionally determined use of some of these forms of language, Stephen recently pointed out that, in contrast to other adjectives ending in "-ful," descriptions such as "hateful," "frightful," and "fearful" never apply to the self because they refer too directly to emotions we prefer to project.

Recent trends in the study of the formal aspects of language more closely related to our own work have been the following: Davis postulated that "inherent in the sound of different letters of the alphabet there are qualities of personality or character." Southard suggested that delusional statements of psychotic patients be analyzed for person, number, and gender of nouns and for voice, tense, and mood of the verbs, since the results might indicate a significant relationship of these parts of speech with "whether the patient is manifestly and subjectively in an active and dominant relation to his fellows, in a passive relation thereto or in a personal plight of difficulties with himself." Southard thought also that the indicative mood might denote the "phlegmatic" temperament, the imperative the "choleric," and the optative the "sanguine."

Employing fewer and more specific criteria, Busemann analyzed the verbal productions of individuals aged 5 to 18 for the proportion of "qualitative" or descriptive as opposed to "active" or dynamic expressions; this author concluded that low values of the *"Action Quotient"* thus obtained were a significant index of the emotional stability of the individual. Stern, in reviewing Busemann's work, writes:

> Busemann is right when he speaks of an "active" and a "qualitative" style: he gives the interesting proof that these "style" differences depend very little upon the subject matter dealt with. The "actionale" person will express himself in the description of a landscape in "active" terms . . . whereas the individual with a qualitative style will dwell even in reports of travel upon the description of more quiet impressions. The active style correlates more closely with motility and emotions, with lower objectivity, less concreteness, and less intellectuality. The qualitative style reflects the opposite traits. Evidently, we have here a distinction similar to that which differential psychology long ago designated as "subjective" and "objective" types.

However, Stern denies the periodical alternation of style qualities reported by Busemann, and considers more valid his own postulate that linguistic development from childhood to youth is characterized by successive phases which he calls the substantive, the action, and the qualitative-descriptive. In this connection it is interesting to note that in the Rorschach test (14) the use of active and qualitative expressions serves to distinguish between *B* (kinaesthetic) and *Fb* (color-description) types; however, like Busemann, Rorschach finds that "the absolute numbers of *B* (movements) and *Fb* (colors) give by themselves only unsatisfactory representations; the main importance lies in their relationship." As a further attempt at correlation, Stern believes that Rorschach's "extrotensive" and "introtensive" personalities correspond to his own subjective and objective types, and that these in turn may be identified by Busemann's *"action quotient."*

2. *Language Analysis of Phantasies as an Aid in Psychiatric Diagnosis*

With regard to our own method, we have pointed out in previous communications that because of the superficial phenomenonological basis and consequent vagaries and inadequacies of current psychiatric nosology, psychological material can be better correlated with the predominant psychodynamics of neurotic and psychotic states than with the oversimplified and often misleading "diagnostic" labels in common use. In the present study we have continued to follow this principle, in that we correlated our data (*a*) with the presence of marked neurotic anxiety, as in our cases of anxiety state, and (*b*) with the relative strength of two special types of defense against anxiety: namely, the conversion hysteric and the obsessive-compulsive reactions. Since, as a purely heuristic device, we also chose cases that exhibited one or another of these dynamic patterns in a dominant form, our criteria acquired a certain incidental "diagnostic" validity, but again only in the sense that prevailing psychic dynamisms rather than simple "diagnoses" were indicated. It must be remembered, however, that other concurrent mental reactions were not excluded by our criteria; thus, in a separate series of psychoses studied by the same methods, a case of paranoia with marked homosexual anxiety scored a higher verb-adjective quotient [6.3] than any anxiety state in the present series, whereas the phantasies of depressed patients with concurrent obsessive-compulsive trends showed many of the features of the latter neurosis. It may be re-emphasized, therefore, that in view of the variability and multiplicity of intrapsychic dynamisms present in every patient the criteria here outlined remain to be supplemented with others indicative of paranoiac, manic, schizophrenic, and other reactions, and that even then only in cases which exhibit dominant psychic reactions in relatively pure form can the phantasies have a "diagnostic" value in the sense of ordinary psychiatric nosology.

E. CONCLUSIONS

A method is presented for the objective analysis of the language of the phantasies of patients with various types of psychoneuroses. Our results indicate that the underlying psychodynamisms of conversion hysteria, anxiety state, and obsessive-compulsive neuroses have characteristic reflections in the phantasy production which can be differentiated by the specific criteria outlined in this study.

III. The Schizophrenic Psychoses

18

PHYSIOLOGIC ASPECTS OF SCHIZOPHRENIC WITHDRAWAL *

by

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So far as theoretic orientation is concerned, exclusively "psychogenic" or exclusively "organogenic" attitudes in psychiatry are definitely on the decrease. While American psychiatry, in particular, is broad minded enough to acknowledge the significance of interacting organic, psychologic and social factors in the genesis and the perpetuation of mental disorders, nevertheless much remains to be done in the synthesis of facts of apparently different orders that are obtained by the use of the technics of the physiologist, the psychologist and the sociologist, respectively. So great are the methodologic difficulties that it is to be feared that many workers, consciously or otherwise, don mental blinders as a defense against the complexities of the problems. Thus, while admitting the desirability and even the necessity of a synthetic approach, they too often carry on their individual studies in a single domain to the practical exclusion of attention to other domains.

To a considerable extent the unilateral approaches can be justified as means of bringing to bear special varieties of technical competence. Nevertheless, the meaning of such partial findings is likely to be mostly lost except as the data are successfully embodied in the larger whole. The inner unity—the connectedness—of the phenomena must somehow be found and reflected in the appraisal of the net meaning of the data. The outstanding task of psychiatry today is to evolve a methodology for such syntheses. A step toward this end is to recognize parallel or common meanings in the data derived from different approaches. In this paper we wish to point out what seems to us a rather meaningful connection between certain features in the psychology and the physiology of schizophrenia.

It is generally recognized that in spite of the great variety of clinical pictures in the schizophrenic group of disorders, one symptom is common to all of them. This is the schizophrenic withdrawal. Psychologically,

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withdrawal means that the vital relations between a person and his physical and social environment become less intense and less numerous. Since life processes consist of interactions between the person and his environment, the consequence of a partial break in environmental contacts leads to an impoverishment and diminished intensity of living. This aspect of schizophrenic withdrawal is expressed psychologically in lack of interest, apathy and indifference. However, the life of the schizophrenic person runs at a low ebb not only psychologically but also physiologically. This is manifested in a lowering of the basal levels of various physiologic functions, such as the basal oxygen consumption rate, basal blood pressure and circulation time.

The lessening of interaction between the person and his environment in schizophrenia becomes particularly evident when he is exposed to the influence of various stimuli. The reduction of responses to stimuli emanating from the physical and social environment is well known in the psychology of schizophrenia. We wish to present evidence that a diminution of responsiveness is paralleled also in the physiology of schizophrenia. This may be illustrated by certain findings obtained in our laboratories.

Our data thus far obtained on the physiologic hyporeactivity of the schizophrenic patient pertain to three major fields: general metabolism, functions of the autonomic nervous system and functions of the central nervous system.

Hyporeactivity to Metabolic Stimulants.—The response of the schizophrenic organism to metabolic stimulation is less than normal, so that to induce a comparable reaction excessive doses are necessary. In a therapeutic experiment, Hoskins and Sleeper administered as much as 48 grains (3 Gm.) daily of desiccated thyroid substance to a patient with little apparent physiologic reaction. Following this lead, Cohen and Fierman administered thyroid to 8 schizophrenic patients in doses of 15 to 18 grains (1 to 1.2 Gm.) daily for several months. Despite an increase in the oxygen consumption rate from a premedication level of 95 to 141 per cent of prediction, the pulse rate tended to decrease once a maximal level of 110 had been reached. No ill effects from the large doses of thyroid were observed. No excessive perspiration, tremor or gastrointestinal disturbance was noted. The psychiatric-clinical changes observed during the period of hyperthyroidism were slight.

The reduced metabolic reactivity is not restricted to a specific endocrine substance but is present also on administration of dinitrophenol, which is a general oxidative stimulant. After the administration of 300 mg. of dinitrophenol to 20 schizophrenic patients and a comparable number of normal controls, Freeman found that the response in cutaneous temperature, insensible perspiration rate and oxygen consumption rate was less in the patients.

Hyporeactivity of the Autonomic Nervous System.—A lessened degree of reactivity was also noted in the field of autonomic physiology. The increase in blood pressure and pulse rate induced by the intravenous administration of 0.05 mg. of epinephrine hydrochloride was definitely less in schizophrenic patients than in normal subjects.

Marked differences in autonomic responsiveness between schizophrenic and normal persons were found by Freeman and Rodnick. These investigators induced experimentally a rather severe stress situation by having the subjects breathe hot moist oxygen, thus blocking the loss of heat from the lungs. They found that the response in blood pressure, heart rate and respiratory volume was markedly less in schizophrenic patients than in normal subjects. The reaction to this stress situation was in more than one fourth of the normal controls so alarming that the experiment could not be completed, while the patients gave little sign of any discomfort.

Hyporeactivity of the Central Nervous System.—A depression of reactivity referable to the central nervous system was found by Angyal and Blackman, who studied the nystagmic response to vestibular stimulation in 20 normal and 58 schizophrenic subjects. Both caloric and rotatory stimulations were applied. The variables which they studied were the absolute number and the frequency of nystagmic beats, $\frac{\text{(number of nystagmic beats)}}{\text{(total duration of reaction)}}$. In response to rotatory stimulation they found a 21 per cent reduction in the absolute number and a 26.2 per cent reduction in the frequency of nystagmic beats. In response to caloric stimulation the schizophrenic patients showed a 38.8 per cent reduction in the frequency and a 48.3 per cent reduction in the absolute number of nystagmic beats.

The results of a recent study by Rodnick also indicated a diminished responsivity of the central nervous system. He studied the difference of response in cutaneous resistance in schizophrenic and in normal subjects. The response to a strong auditory stimulus did not differ to any great extent in the two groups. The preparatory response of the patients to the "ready" signal, however, was only half that of the normal subjects.

Besides our own data, results obtained by other workers also seem to support our thesis of general reduction of responsiveness in schizophrenic patients. We shall refer only to two such findings. Fischer reported that in 277 cases of schizophrenia the specific dynamic action of protein (increase in basal metabolic rate after ingestion of meat) was diminished.

Meco observed that during treatment with various thermogenic agents, mainly foreign proteins and other chemical substances, the rise in temperature in the schizophrenic group was far below that in other groups, and that the whole "thermic shock" was much diminished in the schizophrenic patients.

Summary

Summarizing, we may say that in schizophrenia a rather general reduction of physiologic responsiveness is present. The reaction to metabolic stimulants, such as thyroid and dinitrophenol, was definitely diminished. The reaction to epinephrine administered intravenously as well as to the blocking of heat loss through the lungs was definitely less in schizophrenic patients than in normal persons, indicating reduction of autonomic responsiveness. The nystagmic response to rotation and to caloric stimulation was greatly diminished. The change in cutaneous resistance in response to a preparatory stimulus was far below the normal.

We are not prepared to state whether psychologic withdrawal is caused by a physiologic withdrawal (hyporeactivity) or vice versa. It is probable that neither is the case, but that one is dealing with withdrawal of the total personality manifested in a variety of psychologic and physiologic characteristics.

The question may justly be asked: What value may be derived by bringing together a number of physiologic facts under the common heading of decreased responsiveness and, further, by tying up all these features with psychologic withdrawal? The possible value of such an attempt may be summarized in the following points.

1. It may well be that, for instance, a diminished response to thyroid and a diminished response to vestibular stimulation are distinct phenomena, with no relation at all between them. Furthermore, it is possible that there is only a superficial analogy between those instances of reduced physiologic resistiveness which we have cited and the various psychologic symptoms grouped in the category of withdrawal. On the other hand, it may also be true that there is a significant and meaningful connection between all these features. In other words, it is possible that what is observed in schizophrenia is not resistance to thyroid medication, a lessened response to epinephrine, a diminished vestibular reactivity and psychologic indifference to stimuli of the physical and social environment, but only manifestations of one and the same condition. It may be useful to broaden the concept of withdrawal to designate not a purely psychologic but a "holistic" or "psychobiologic" phenomenon. The possibility that this phenomenon may be holistic and not segmental is strong enough to permit this assumption to be used as a working hypothesis.

2. The type of approach which we are suggesting here should not be a retreat into generalities. On the contrary, we wish to emphasize the necessity of specific and concrete studies. After a number of psychologic and physiologic features are brought together under the common concept of withdrawal, this concept, which is used at present with a somewhat vague and general connotation, gains a new and rather definite

meaning. The phenomenon of withdrawal may thus be specifically defined as consisting of such and such psychologic and physiologic characteristics.

3. The assumption of a psychobiologic disturbance, characterized by certain psychologic and physiologic manifestations, raises new problems and gives specific hints for further studies. It makes a distinct difference with regard to the type of problems one investigates whether one works with this or with some other hypothesis. This may be illustrated by a hypothetic example. Once the resistance of the schizophrenic person to thyroid medication is established, one may attempt to study systematically whether this phenomenon is due to (1) disturbed absorption, (2) some chemical agent in the blood which may neutralize thyroxine or (3) tissue resistance. That is, one may study resistance to thyroid as such. This type of investigation is necessary, and it should be made in every instance. However, if one is oriented along the lines featured, further investigations are also indicated. One not only should study decreased reaction to thyroid as such but also should consider the possibility that this phenomenon is a manifestation of a generalized condition of reduced reactivity. The latter being assumed, the first task will be to determine what functions are involved and to what degree. Our studies already indicate that the reduction of reactivity in persons with schizophrenia is not uniform; one physiologic function undergoes a greater reduction than another; some functions remain unchanged, and in some respects the reactivity may even be increased. The last possibility was suggested, for example, by Freeman and Hoskins' finding of an increased response of the blood pressure to a preparation of adrenal cortex. The increase of blood lipids after testosterone medication observed by Randall might be of the same order. Therefore, the reduction of responsiveness, since it does not involve all functions of the organism uniformly, will probably be most adequately presented in the form of a profile, which would indicate what functions are involved and to what degree. After such a profile has been obtained and the essential psychologic and physiologic components of withdrawal have been defined, one will be better equipped to investigate the causation of this complex phenomenon.

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EFFECT OF EMOTIONAL EXCITEMENT ON THE INSULIN CONTENT OF THE BLOOD *

CONTRIBUTION TO PHYSIOLOGY OF THE PSYCHOSES

by

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It was shown recently in experiments on cats and rats that the autonomic nervous system participates to a larger extent in the emotional process than would be anticipated from Cannon's classic studies. According to our investigations emotional excitement and hypothalamic stimulation are characterized by a discharge over both the vagoinsulin and the sympatheticoadrenal system, with predominance of the excitation of the latter. This result was shown particularly clearly in experiments on rats, in which it was found that normal rats reacted to emotional stimuli with hyperglycemia whereas adrenalectomized rats showed hypoglycemia in response to emotional excitement. That these two effects were due to a discharge over the sympatheticoadrenal and the vagoinsulin system respectively was proved by the observation that no changes in blood sugar resulted from emotional stimuli applied to vagotomized-adrenalectomized animals.

Subsequent studies of Gellhorn, Feldman and Allen made it possible to assay insulin in minute quantities in the blood. The hypophysectomized-adrenodemedullated rat was used for the assay. Such a preparation reacts to the injection of 0.0002 unit of insulin per hundred grams rat weight with an appreciable fall in blood sugar. Since emotion involves both the sympatheticoadrenal and the vagoinsulin system, the chance of detecting insulin in the blood in increased amounts during emotional excitement in man would be greatest if subjects could be selected in whom the sympathetic nervous system responded less than in normal persons. The clinical and experimental literature cited in an earlier paper, as well as the more recent experiments of Freeman and Rodnick, suggests that this is true of schizophrenic patients. Moreover, Tauber and associates, in an investigation of the bladder reflexes, found a stronger parasympathetic reaction in catatonic patients than in normal subjects. For this reason the influence of emotion on normal and on excited psychotic patients was investigated.

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METHOD

Rats weighing approximately 100 to 130 Gm. were used for the assay of the insulin content of the blood. The hypophysis was removed through the pharyngeal approach, and after an interval of at least one week the adrenal glands were demedullated. Forty-eight hours later the animals were used, after they had been made to fast for six hours. The blood from the patients and from normal persons was obtained two hours after luncheon, coagulation being prevented by use of citrate. The blood of the patient and that of the rat prior to the injection of the patient's blood were analyzed for sugar; then, in less than five minutes after it had been drawn, 1 cc. of whole blood per hundred grams rat weight was injected intraperitoneally. One hour later a second sample of blood was obtained from the rat and the sugar content was assayed by means of the Somogyi modification of the Shaffer-Hartman method.

RESULTS

We first investigated whether the insulin content of normal persons and that of schizophrenic patients were different. Table 1 shows the results of the assay of the insulin of the blood of 10 normal persons. The blood sugar varied from 74 to 84 mg. per hundred cubic centimeters. The as-

TABLE 1

RESULTS OF ASSAY OF THE INSULIN CONTENT OF THE BLOOD OF TEN CONTROL (NORMAL) SUBJECTS

NUMBER	SUBJECT'S BLOOD SUGAR, MG. PER 100 CC.	BLOOD SUGAR OF TEST ANIMAL, MG. PER 100 CC.*	
1	77.4	58.0	49.4
2	79.5	56.9	48.3
3	76.3	56.9	51.6
4	77.4	59.1	53.7
5	80.6	56.9	50.5
6	78.5	56.9	52.6
7	82.7	56.9	53.7
8	74.1	56.9	50.5
9	75.2	59.1	51.6
10	83.8	56.9	53.7

* In this table and in the succeeding tables, the blood sugar value of the hypophysectomized-adrenodemedullated rat before injection of blood is shown in the first column and that obtained one hour after the injection of 1 cc. of blood per hundred grams rat weight is shown in the second column.

say of the blood sugar made on the hypophysectomized-adrenodemedullated rat showed a slight but consistent fall after the injection of the blood. The blood of normal persons seems to contain approximately 0.0001 to 0.0002 unit of insulin per cubic centimeter.

Table 2 shows results obtained on a series of nonexcited schizophrenic patients. The variation in sugar content of the patients' blood was approximately the same as that found in the blood of the controls (74 to 81 mg. per hundred cubic centimeters). The assay of insulin on the test rats revealed also a slight but consistent fall in blood sugar of the same magnitude as that found with the blood of the control. From these experiments it may be concluded that there are no significant differences between the insulin content of the blood of normal persons and that of nonexcited schizophrenic patients when tested two hours after a meal.

TABLE 2

RESULTS OF ASSAY OF THE INSULIN CONTENT OF THE BLOOD OF NONEXCITED SCHIZOPHRENIC PATIENTS

NUMBER	PATIENT'S BLOOD SUGAR, MG. PER 100 CC.	BLOOD SUGAR OF TEST ANIMAL, MG. PER 100 CC.	
1	80.6	60.2	51.6
2	78.5	58.0	53.7
3	77.4	61.4	49.4
4	74.1	60.2	54.8
5	76.3	58.0	49.4
6	81.1	58.0	48.3
7	77.4	59.1	56.2
8	74.1	60.2	49.4
9	81.1	58.0	53.7
10	80.6	60.2	51.6

The main series of experiments was performed on patients and normal persons during the state of excitement. No selection with regard to the form of the psychosis was made. The results obtained for excited psychotic patients may be best discussed on the basis of the blood sugar values found in these patients during emotional excitement.

In agreement with the investigations of Bowman and Kasanin, Gildea and associates and Whitehorn, it was found that the majority of the excited patients showed normal values for blood sugar. In 21 patients the blood sugar varied from 70 to 85 mg. per hundred cubic centimeters, and only in 6 patients, to be discussed later, was the blood sugar value higher than 85 mg. per hundred cubic centimeters.

When assays of the insulin content of the blood of excited patients were made on hypophysectomized-adrenodemedullated rats, a consistent

TABLE 3

Results of Assay of the Insulin Content of the Blood of Excited Psychotic Patients

NUMBER	PATIENT'S BLOOD SUGAR, MG. PER 100 CC.	BLOOD SUGAR OF TEST ANIMAL, MG. PER 100 CC.		DIAGNOSIS
Blood Sugar Not Elevated				
1	79.5	56.9	36.5	Manic-depressive psychosis
2	81.1	59.1	33.3	Psychosis due to other metabolic disturbances
3	81.1	58.0	35.4	Psychosis due to other metabolic disturbances
4	80.6	59.1	37.6	Schizophrenia
5	83.8	60.2	29.0	Schizophrenia
6	79.5	58.0	33.3	Dementia paralytica
7	78.5	60.2	32.2	Paranoid psychosis
8	81.1	59.1	36.5	Schizophrenia
9	79.5	62.3	38.7	Dementia praecox
10	73.1	61.2	35.4	Dementia praecox
11	84.9	59.1	34.4	Dementia paralytica
12	69.8	56.9	32.2	Schizophrenia
13	74.1	56.9	32.2	Schizophrenia
14	82.7	59.1	38.7	Catatonic schizophrenia
15	77.4	59.1	35.4	Schizophrenia
16	74.1	60.2	39.7	Schizophrenia
17	84.9	60.2	34.4	Acute schizophrenia
18	75.2	58.0	39.7	Schizophrenia
19	77.4	60.2	36.5	Schizophrenia
20	80.6	56.9	34.4	Schizophrenia
21	82.7	60.2	34.4	Schizophrenia
Blood Sugar Elevated				
1	107.5	58.0	59.1	Acute schizophrenia
2	109.2	59.1	45.1	Schizophrenia
3	102.1	59.1	49.4	Schizophrenia
4	94.6	60.2	39.7	Dementia praecox
5	132.5	61.2	56.9	Manic-depressive psychosis
6	109.2	60.2	50.5	Schizophrenia

reaction appeared which differed fundamentally from that observed in the nonexcited control and schizophrenic groups. In all 21 observations[1] it was found that the blood obtained from the excited patients produced a hypoglycemic reaction in the test animal and caused typical hypoglycemic symptoms. The animal lay on its side and did not show any righting reflexes; occasionally hypoglycemic convulsions were observed. The analysis of the blood sugar of the test animal showed very low values, varying between 29 and 40 mg. per hundred cubic centimeters. In no case were values observed similar to those obtained with the blood of nonexcited normal persons or psychotic patients. In view of the fact that the hypoglycemic reaction of the hypophysectomized-adrenodemedullated animal is specific for insulin (Gellhorn, Feldman and Allen), the occurrence of severe hypoglycemia indicates that the blood contains more insulin than normal. Moreover, the absence of any hyperglycemic effect on their own blood suggests that in this group of patients emotional excitement is accompanied by no appreciable increase in the amounts of epinephrine in the blood, but by a greatly increased secretion of insulin.

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[1] In 1 instance the injection of blood of the excited patient produced no change in blood sugar in the hypophysectomized-adrenodemedullated rat. The initial blood sugar value before injection was 60.2 mg. per hundred cubic centimeters and the value after

TABLE 4

RESULTS OF ASSAY OF THE INSULIN CONTENT OF THE BLOOD OF EXCITED NORMAL PERSONS

NUMBER	SUBJECT'S BLOOD SUGAR, MG. PER 100 CC.	BLOOD SUGAR OF TEST ANIMAL, MG. PER 100 CC.	
1	96.8	60.2	64.5
2	94.6	58.0	58.0
3	92.5	59.1	59.1
4	98.9	56.9	64.5
5	99.9	58.0	61.2
6	102.1	58.0	59.1 (Labor, 7 hr.)

Although the majority of psychotic patients seem to show no hyperglycemic effects from emotional excitement, it is to be expected that some would show reactions somewhat intermediate between those of normal persons and those of the psychotic group which was just described. In fact, Whitehorn and others have observed occasional cases of hyperglycemia among excited psychotic patients. Our own observations showed increased values for blood sugar in 6 patients. When the blood obtained from these patients was tested on the hypophysectomized-adrenodemedul-

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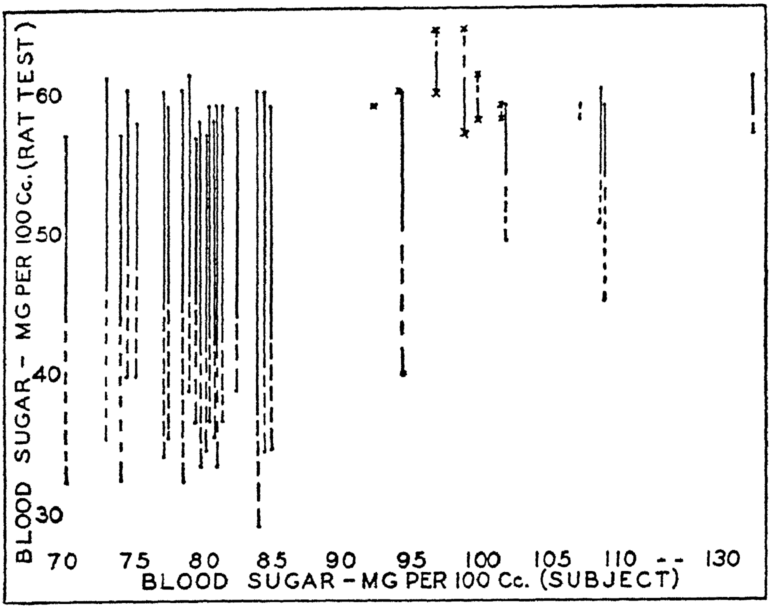
injection was 59.1 mg. Such a response, in which there was absent even the slight hypoglycemic effect produced on the test animal by blood of a normal subject, is characteristic of incomplete hypophysectomy. In a number of experiments similar values were found when animals with incomplete hypophysectomy were used. In this particular case no remnants of the hypophysis were found macroscopically, but it seems safe to conclude that microscopic remnants must have remained in the test animal.

lated rats, it was found that all but 1 animal showed hypoglycemic reactions of various degrees. The experiments indicate that sufficient insulin has been liberated in these patients during emotional excitement to offset the effects of the simultaneously increased epinephrine content of the blood.

The significance of these results becomes clear when they are compared with observations on the effect of emotional excitement on the blood sugar and insulin content of the blood of normal subjects. Excitable students who were subjected to a three hour examination in physiology were used as experimental subjects. The blood sugar ranged from 93 to 102 mg. per hundred cubic centimeters, indicating mild hyperglycemia, which was definitely less pronounced than that found in the hyperglycemic group of excited psychotic patients. The tests on hypophysectomized-adrenodemedullated rats gave results which were fundamentally different from



The effect of emotional excitement on the insulin content of the blood in normal subjects and in psychotic patients.

The blood sugar values for the subjects are indicated on the abscissa. The effect of the injection of 1 cc. of blood per hundred grams hypophysectomized-adrenodemedullated rat are indicated on the ordinate.

The initial and the final blood sugar of the test animal are connected by a line which near the initial value is continuous and near the final value is interrupted. The tests made with the blood of excited psychotic patients are indicated by lines with dots; those made with the blood of excited normal controls, by lines with crosses.

those obtained for excited psychotic patients. The blood sugar of the test animals was either unchanged or very slightly increased as a result of the injection of the blood from these excited normal subjects. These experiments indicate that when the blood sugar is raised appreciably in normal persons the amount of epinephrine present in the blood is adequate to offset the effects of its insulin content on the test animal.

It was described in the experiments reported thus far that fundamental differences exist between the insulin content of the blood of normal and that of psychotic subjects under conditions of excitement, although such differences are absent when nonexcited patients are tested. This conclusion is further supported by investigations on 4 patients who were once tested during a state of excitement and then after the excitement had subsided. The results reproduced in table 5 show clearly that the insulin content of the blood of these patients is similar to that found in other, nonexcited patients or in normal persons.

TABLE 5

REVERSIBILITY OF THE EFFECT OF EXCITEMENT ON THE INSULIN CONTENT OF THE BLOOD OF PSYCHOTIC PATIENTS

PATIENT	PATIENT'S BLOOD SUGAR, MG. PER 100 CC.	BLOOD SUGAR OF TEST ANIMAL, MG. PER 100 CC.		DIAGNOSIS
P, excited	79.5	56.9	36.5	Manic-depressive psychosis
P, not excited	74.1	60.2	54.8	Manic-depressive psychosis
D, excited	81.1	59.1	33.3	Psychosis due to other metabolic disturbances
D, not excited	76.3	58.0	49.4	
M, excited	83.8	60.2	29.0	Schizophrenia
M, not excited	74.1	60.2	49.4	Schizophrenia
B, excited	102.1	59.1	49.4	Schizophrenia
B, not excited	81.1	58.0	53.7	Schizophrenia

COMMENT

The results of investigations reported in this paper show clearly that the insulin content of the blood of normal and that of psychotic subjects are the same. Apparently, psychotic and normal persons do not differ with regard to the secretion of insulin in periods of rest but differ only with respect to the reactivity of the autonomic centers controlling the secretion of insulin via the vagus nerve and the recreation of epinephrine via the sympathetic system. Studies by Gellhorn, Cortell and Feldman showed that hypothalamic stimulation leading to the syndrome of sham rage, as well as emotional excitement, produced in unanesthetized animals a discharge over both the vagoinsulin and the sympatheticoadrenal system, the effect on the latter predominating. Such a predominance is observed in normal persons under conditions of emotional excitement and results in hyperglycemia. Psychotic persons, however, show a fundamentally different reaction, inasmuch as they fail to raise their own blood sugar under conditions leading apparently to marked degrees of general excitation. Since sham rage and emotional excitement lead to similar alterations in the autonomic balance (Gellhorn, Cortell and Feldman), the question whether psychotic persons experience emotional excitement or display it is not of importance. As a matter of fact, the cortical component of the emotional process does not contribute to the degree of autonomic discharge except by inhibiting it. Therefore the fundamental difference in the blood sugar reactions of normal and of psychotic persons under conditions of excitement points to a lesser responsiveness of the centers of the sympatheticoadrenal system in the latter.

It is to be expected that between normal persons and psychotic patients, characterized by a weakness in the reactivity of the sympathetic centers, there would be an intermediate group in which the sympatheticoadrenal system would react in an approximately normal fashion in spite of the presence of a psychosis. This group is represented by 6 out of 27 cases in which "emotional excitement" led to an increased level of the blood sugar.

The assay of insulin in the blood of normal persons and of psychotic patients gives further insight into the conditions of the autonomic centers in emotional excitement. The fact that hypophysectomized-adrenodemedullated rats react invariably with marked hypoglycemia to the injection of blood obtained from excited psychotic patients in whom the blood sugar value remained unaltered during the period of excitement indicates clearly that insulin is secreted in increased amounts in these patients under conditions of emotional excitement. Accordingly, it must be assumed that these patients react to the emotional stimulus with a discharge which involves exclusively or predominantly the vagoinsulin system. Such an interpretation is based on the fact that the hypophysectomized-adrenodemedullated rat does not react to those quantities of epinephrine which are normally present in the blood. When the blood sugar is unchanged in the patient's blood the result on the test animal is solely determined by the insulin concentration present in the blood.

On the other hand, blood obtained from normal persons during emotional excitement failed to elicit even the slight hypoglycemic reaction on the test animals which was observed when blood from unexcited normal persons was injected. This is due to the fact that the increased epinephrine concentration in the blood is sufficient to mask completely the effect of the normal insulin content of the blood on the blood sugar of the test animal. Although an attempt will be made in later experiments to separate epinephrine and insulin in the blood of normal subjects and of patients under conditions of excitement, the experiments show clearly that this condition elicits predominantly an increase in epinephrine content unaccompanied by significant alterations in the insulin concentration in normal persons whereas the majority of psychotic patients showed only increased amounts of insulin in the blood during excitement, without any rise in the epinephrine concentration.

It was mentioned before that 6 psychotic patients showed a rise in blood sugar during a state of emotional excitement, a fact indicating that the sympatheticoadrenal system was reacting adequately. Since the blood sugar values were considerably higher for these patients than for our excited normal controls, it may be said that more epinephrine was secreted by these patients than by the control subjects subjected to a relatively slight emotional stimulus. In spite of this fact it is found that the blood of the former when injected into the hypophysectomized-adrenodemedullated rats elicited a hypoglycemic reaction in the test animals whereas the injection of blood obtained from the excited control subjects caused either no change in or a rise of blood sugar in the test animals. This proves conclusively that the balance of the autonomic centers is fundamentally different in normal and in psychotic persons. This statement applies also to those patients who react to excitement with hyperglycemia.

Although according to the clinical diagnosis the condition of the majority of patients studied belongs to the schizophrenic group, the observations seem to suggest that the disturbance in the reactivity of the autonomic centers is by no means restricted to this form of mental illness. Only further investigations can clarify the significance of these findings for various forms of mental disease.

It is noteworthy that the amount of insulin observed in the blood of nonexcited schizophrenic patients is similar to that observed in the blood of normal persons. Apparently the humoral factors regulating by peripheral mechanisms the secretion of insulin are not affected in these patients, but the reactivity of the autonomic centers controlling the output of these hormones (insulin and epinephrine) is altered.

Several authors (Hoskins, Pfister, Wespi and others) suggested weakness of the sympatheticoadrenal system in schizophrenia on the basis of the response of the patient to various environmental stimuli. The results of these investigations showed only quantitative differences between normal and schizophrenic patients and a considerable overlap of the two groups. By taking the vagoinsulin system into account and by using the hypophysectomized-adrenodemedullated rat as a test animal a fundamental difference in the reactivity of autonomic centers between normal and psychotic subjects was discovered. These observations are of importance for the understanding of the physiologic mechanism of the shock therapy. In 1938 Gellhorn showed that the various forms of shock therapy have one factor in common, the prolonged excitation of the centers of the sympathetic system. This holds true also for electric shock (Kessler and Gellhorn). This analysis and the proof of the imbalance of the autonomic centers in psychotic persons presented in the investigations reported in this paper form the rational basis of the shock therapy of psychoses. The most important problem is to determine how disturbances in the autonomic centers affect the cortex.

It is of interest to discuss the possible factors involved in the reversal of the responsiveness of the autonomic centers in psychotic patients as compared with normal persons. Investigations by Gellhorn and Feldman showed that the thyroid hormone has a specific effect on the excitability of the centers of the sympatheticoadrenal system. Thyroidectomy leads to a decrease in the responsiveness of the center of the sympatheticoadrenal system without altering the reactivity of the vagoinsulin system. Conversely, it was found that the injection of thyroxin greatly increased the reactivity of the sympathetic centers as tested by the blood sugar response to metrazol and electric shock while it did not alter the vagoinsulin system. These observations are of interest in view of the fact that according to several authors (Hoskins and Sleeper, Rheingold and others) a thyroid deficiency not infrequently accompanies schizophrenia.

From a therapeutic standpoint it seems of interest to point out that the thyroid hormone is by no means the only factor determining the excitability of the autonomic centers. It was recently found that magnesium or calcium deficiency (Gellhorn and Feldman) greatly increases the excitability of the centers of the sympatheticoadrenal system and markedly diminishes the reactivity of the centers of the vagoinsulin system. Whereas thyroidectomy diminishes the predominance of the sympatheticoadrenal system without affecting the vagoinsulin system, deficiency in magnesium or calcium seems to increase greatly the reactivity of the sympatheticoadrenal centers. Such studies make it not improbable that dietary measures may alter the responsiveness of autonomic centers in the human being. If it is true that the reactivity of these centers plays an important part in the development of the psychosis, these observations suggest new therapeutic avenues of approach for mental disease.

Summary

The insulin content of human blood is assayed with the hypophysectomized-adrenodemedullated rat. It is shown that normal and psychotic

persons have the same amount of insulin in the blood in the absence of emotional excitement. Under conditions of emotional excitement, however, the insulin content of the blood is greatly increased in psychotic patients. If under these conditions their own blood sugar is unchanged (and this was the case in 21 of 27 cases), an increased insulin concentration in the blood leads to a marked fall in blood sugar of the test animal, accompanied by coma. If the blood sugar level is raised (6 cases out of 27), it may cause this hypoglycemic syndrome in the test animal in spite of the increased epinephrine concentration of the blood. Normal persons, however, under conditions of excitement showed a slight rise in the blood sugar, and their blood produced no hypoglycemic reaction whatever in test animals. The experiments are interpreted to mean that the balance of the autonomic centers in psychotic patients under emotional stress is shifted toward the vagoinsulin side whereas in normal persons the sympatheticoadrenal system greatly predominates.

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THE INSULIN-SHOCK AND METRAZOL TREATMENTS OF SCHIZOPHRENIA, WITH EMPHASIS ON PSYCHOLOGICAL ASPECTS *

by

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In the past several years two new therapeutic methods have commanded the focus of psychiatric attention—the *insulin-shock* and *metrazol* treatments. The former, through large doses of insulin, effects a reduction in blood sugar and finally gives rise to definite shocks; the latter, through intravenous metrazol injections, produces epileptiform convulsions. Both methods, though leaving us in doubt as regards the actual nature of their therapeutic action, have infused new hope into the treatment of the psychoses, particularly schizophrenia. Both have definitely opened up new fields of research for the psychiatrist, biochemist, physiologist, neurologist, and psychologist. The aim of this paper, which makes no claim to exhaustiveness, is to acquaint the psychologist with these important therapies.[1]

INSULIN-SHOCK TREATMENT

History. The insulin-shock treatment of schizophrenia was discovered by Sakel, who came upon it through the auspicious interplay of observation, deduction, and accident. It evolved from experimentation in the treatment of morphine addiction. Sakel, assuming adrenalin to be operative in producing the withdrawal symptoms characteristic of morphine addiction, employed insulin as an adrenalin antagonist. Although careful to limit the doses so as to produce only mild hypoglycemia, occasionally he was surprised by deeper hypoglycemic reactions than were intended, and the patient slipped into severe shock. Observing beneficial effects from such occurrences, he used hypoglycemic shocks first in treating other excited states, and then in treating actual psychoses. The results obtained were encouraging, especially in cases of schizophrenia. In 1933 he began treating a large series of cases in the psychiatric hospital associated with the University of Vienna. From here the treatment spread rapidly to all parts of the world. In 1933 he reported on his new treatment of schizophrenia to the Verein für Neurologie und Psychiatrie in Vienna.

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[1] Both therapies, though employed chiefly in the treatment of schizophrenia, have been tried with other mental abnormalities. This review, however, is limited to the use of these therapies in schizophrenia, covering work up to the spring of 1939.

Technique. In presenting the technique of administering insulin-shock therapy we will describe the general method outlined by Sakel; this is the prototype from which all others derive. The technique is not rigid; Sakel is explicit on this point, stating that "the method itself is not stereotyped, and allows a wide scope of variation, so that frequent modification may often be necessary for any one patient. Success depends very much on the use of the right modification at the right time, in accordance with the changing behavior of the patient in the various phases."

The essence of the treatment is the repeated production, usually daily, of severe hypoglycemic shocks. These are effected through deep intramuscular injections of insulin, given in bed in the early morning fasting. Several days of cautious preliminary exploration are usually necessary to determine the shock dosage; this dosage may later be decreased in some cases to two-thirds or even a half, as sensitization takes place. Actual shock, which occurs from one to several hours after injection, is preceded by characteristic signs of hypoglycemia. These are weakness, hunger (which may be severe), perspiring, and progressive somnolence. Somnolence may be interrupted from time to time by episodes of excitement. As somnolence deepens, the patient loses contact with the surroundings and passes into shock.[2] Transitory spasms of the extremities, fine muscular twitchings, intense tremors of the entire body, stertorous breathing, and semivocalizations in the nature of grunts and snorts are common. The body temperature may drop several degrees. As shock progresses, it may lead to deep coma. In some instances epileptiform convulsions either precede or accompany coma. After such convulsions spontaneous awakening usually takes place.[3] Coma, which is characterized by complete loss of response to any kind of stimulation, tends to occur from three to four hours after injection. It is allowed to continue for from a few minutes to an hour, depending on the psychotic picture and physical condition of the patient. Termination of shock is accomplished in several ways. If the shock is superficial and the patient's coöperation can be obtained, sugar-water is given by mouth; otherwise, a tube-feeding is administered. If a quick arousal is desired, an intravenous injection of glucose is given. This brings immediate awakening. After the patient is fully awake, regardless of method of arousal employed, a regular meal, rich in carbohydrate, is fed to prevent subsequent relapse into shock. The general sequence of events in coming out of shock is just the reverse of that in going in.

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[2] The term 'shock' has not been rigidly defined. The writers employ it in the sense suggested by Küppers, in which lack of ordinary awakability is made the criterion. Müller employs a more concrete criterion, the inability to drink.

[3] The awakening is probably due to a sudden rise in blood sugar; the muscular activity stimulates adrenalin secretion, which, in turn, mobilizes liver glycogen.

Individualization of treatment is important. By varying length, depth, and type of shock a range of reactions may be produced. Sakel strives to evoke, and then fixate, a reaction which is the diametric opposite of the psychotic picture he is trying to combat. Fixation is accomplished through properly timing the termination of shock. He states: "The observation that there is a tendency toward fixation of the clinical picture which happens to dominate at the time of termination, helps to explain the good results of the following modification. . . ." The modifications recommended by him are these: Paranoid patients should be subjected to deep comas.[4] Stuporous patients should be aroused from shock at the point of greatest activity; if activity is insufficient, they should be subjected to metrazol convulsions. Excited catatonics should be put into deep somnolence, though not into actual coma, and convulsions should be avoided for them. No patient, other than a stuporous one, should be aroused during a reactivated psychosis (*infra*).

Improvement may be evidenced at first only by abatement of the more gross symptoms, such as hallucinations and delusions. Later, a disappearance of the more subtle emotional abnormalities may follow. Occasionally a patient will become lucid suddenly and remain so from that time on; but such phenomenally sudden recoveries are rare. Usually lucidity is fleeting in its first appearances, and is confined to the hypoglycemic somnolent periods immediately preceding and following shock. As improvement continues, the lucid periods become progressively longer and extend further and further into the posthypoglycemic state. Increasing lucidity and accessibility necessitate more than ever the employment of tact in handling the patient. Sakel describes the situation as follows:

> One got the impression that the patients were so impressionable at this stage that they responded to almost any kind of suggestion from the environment . . . Probably the most frequent reactions to environmental influences of this kind were paranoid attitudes.

Such periods of lucidity and accessibility afford the physician an opportunity to establish rapport and to initiate psychotherapy.

After improvement is well under way, a temporary return of psychotic symptoms is not uncommon. Sakel describes this condition, which he calls "reactivated psychosis," as follows:

> The symptoms which occur during hypoglycemia vary considerably in different phases of treatment. Patients who show a short period of lucidity during hypoglycemia during the early phase of treatment, only to remain psychotic

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[4] Comas may be encouraged by minimizing external stimulation; if necessary, they can be brought on through administration of luminal.

for the entire remainder of the day, later show a complete reversal of reaction and remain symptom-free throughout the day, but may show a certain reactivation of their psychosis during hypoglycemia.

James, Freudenberg, and Cannon explain the reactivated psychosis " . . . as a combination of the insulin psychosis observed in mentally normal diabetics, and the actual psychotic condition for which the patient is being treated." To the writers it appears that the combination of symptoms in hypoglycemia is of the kind found in every organic mental reaction. It consists, first of all, of symptoms which are primarily due to the noxious agent; this may be a brain trauma, an infectious process, or a toxic state such as hypoglycemia. These conditions uniformly give rise to clouded consciousness, delirious symptoms, memory disturbances, etc. In addition, symptoms of a more individual nature may appear; these are especially prominent in psychotics, and seem to account for the so-called reactivated psychosis. We have frequently observed, especially in catatonics, that the same patterns which had previously been present during the severe acute psychosis reappeared in the clouded condition of hypoglycemia. These patterns may continue with remarkable uniformity, as Palisa points out. In different individuals, however, the shock picture varies widely.

Length of treatment, *i.e.* the number of insulin shocks given, varies according to improvement shown. Treatment should be continued, if possible, until all psychotic symptoms disappear. Two or three months may perhaps be considered a representative course. The question of how long to continue treatment in the absence of improvement is up to the physician. Müller urges a trial of at least three months. Termination of treatment is not brought about abruptly; instead, milder, nonshock doses of insulin are given for a few days to prepare the system for discontinuance of exogenous insulin.

Dangers. The dangers of insulin-shock treatment should neither be exaggerated nor ignored. Statistics on fatality rates range between .5 and 1.5%. For the most part, fatalities have occurred during unintentional protracted shocks—that is, when glucose or other agents fail to bring awakening. Organic brain syndromes have been reported as sequelae to such protracted shocks; most of these, however, proved to be transitory. The dangers of the treatment may be decreased by first giving a thorough physical examination, including an electrocardiogram. Patients showing signs of myocardial damage, tuberculosis, and severe arteriosclerosis should be excluded from therapy.

Results. Adequate appraisal of the therapy is as yet impossible. Truly objective indices are not available. Uniform bases of diagnosis and precise criteria of improvement are lacking. Actually comparable control groups have not been used. Finally, the therapy is too new to permit determinations of the permanency of remissions ascribed to it. Despite these limitations to evaluation, the widespread use of the treatment with but few dissenting reports is suggestive of its effectiveness. As Freudenberg states: "All authors who have written on the subject, with a few exceptions, regard insulin therapy as an important step forward in the treatment of schizophrenia." In this review we can but cite a few of the more substantial statistics in point, with the hope that they are representative.

Sakel, reporting on his original group of approximately 50 insulin-treated cases, indicates full remissions (apparent cures) in 70% and social remissions in an additional 18%. His figures are considerably larger than those reported by other investigators. The discrepancy is due, in part, to the fact that his cases, being of more recent onset, presented a more favorable prognosis. More representative are the figures of Müller and Malzberg, who have carried out extensive surveys. Müller's figures are based on the combined data from 22 Swiss institutions and comprise 495 treated cases. He reports full or social remissions (patients allowed to return to their occupations in apparent good health), according to duration of psychosis before treatment, as follows: up to six months, 59%; six to twelve months, 52%; one to two years, 27%; over two years, 11%. Malzberg's figures are based on the combined data from 19 New York State hospitals and comprise 1039 insulin-treated cases and 1039 controls. His controls were matched with the treated cases for institution, sex, and type of dementia praecox. He reports 13% recovery and an additional 54% improvement in the treated cases, as compared with 3.5% recovery and 19% improvement in the control group. These data, when presented according to duration of psychosis before treatment, reveal the following percentages of recovery (mere improvement not included): *treated group*—up to one month, 43%; one to three months, 33%; seven to twelve months, 16%; one to two years, 12%; and three to five years, 4%; *control group*—up to one month, 8%; one to three months, 7%; seven to twelve months, 0%; one to two years, .6%; and three to five years, 0%. In comparing these figures with those of Müller it must be borne in mind that Müller's data include social, as well as full, remissions. Both Müller and Malzberg, as well as Humbert and Friedemann, report more favorable prognosis under insulin treatment for the catatonic and paranoid types than for the hebephrenic type. Malzberg reports the same trend, though with generally lower remission rates, for untreated cases. Müller finds the more favorable prognosis of paranoids under treatment to hold only for cases of less than a year's standing, and the prognosis of catatonics better in excited than in stuporous cases.

Not all recoveries or improvements are permanent. Relapses are reported by Malzberg in 24.5%, and by Müller in from 6 to 13%, of cases in remission. Müller finds the higher relapse rates in cases of long standing.

Neurological Aspects. Abnormal neurological symptoms, of varying degrees of severity, always accompany deep insulin shock. Sakel describes the general neurological change essentially as follows: During mere somnolence the reflexes remain intact, but with deepening shock they become pathological. Babinski, Oppenheim, and Mendel-Bechterew reflexes appear. Brief transitory muscle spasms, myoclonic twitchings, and intense tremors of the entire body may be observed. If very deep coma ensues, all of the reflexes, including even the corneal and swallowing reflexes, disappear, leaving the patient in an areflexic state, with complete atonia of the entire musculature. Epileptiform convulsions are not infrequent. As the patient gradually awakens from shock following tube-feeding, the reflexes return in the reverse order.

Angyal attributes the sequential nature of the neurological phenomena to a progressive impairment of cerebral function. He conceives this impairment as starting in the frontal poles, proceeding to the motor areas, and finally descending to the brain stem and medulla. His conception is in harmony with the theory that the phylogenetically recent structures of the brain are the more vulnerable and are the first to show disturbances of function. Pap, observing choreiform and athetosic movements and decerebrate rigidity, emphasizes the extrapyramidal nature of the shock motor symptoms. Our own observations indicate involvement of both cortical-pyramidal and extrapyramidal structures and suggest less regularity in the sequence of neurological symptoms than the foregoing descriptions might imply. Sakel and others emphasize their observations that the dominant hemisphere is affected first and recovers last in hypoglycemia. We doubt that this is a universal tendency. Orenstein and Schilder cite evidence to the contrary, and our own observations have not indicated such a tendency. Incidentally, the most severe neurological syndrome we have seen, a hemiplegia of two hours' duration, contradicted it; this hemiplegia involved the left side of the body in a right-handed individual.

Changes in the activity of the autonomic nervous system are common. These changes consist in shifts of tone from the parasympathetic to the sympathetic division, and vice versa. The shifts appear to correlate with emotional state; fear and excitement are accompanied by dominant sympathetic tone. Increased sympathetic tone seems to be a characteristic forerunner of epileptiform convulsions in insulin shock. We regularly observe an increased blood pressure and pulse rate, and maximally dilated pupils a few minutes before seizure. In this latter respect, in our opinion, the insulin convulsion differs from the metrazol, in which maximal dilatation does not occur until the end of the tonic spasm (*infra*).

Electroencephalographic studies have shown both the presence of abnormal brain waves in schizophrenics and the dissolution of these waves with insulin treatment. Lemere and Hoagland, Rubin, and Cameron report the presence of excessive delta waves in the electroencephalograms of schizophrenics; these waves disappeared after insulin treatment. Lemere also reports a strengthening of alpha rhythm during treatment; the alpha rhythm reverted to its pretreatment level, however, within a few weeks after insulin discontinuance.

Psychological Aspects. Interesting psychological abnormalities accompany hypoglycemia, especially the preshock and awakening phases. In some respects they resemble, and in others differ from, abnormal phenomena accompanying surgical anesthesia and other delirious states. Some of these phenomena are externally observable; others can only be arrived at through subjective report. Not all are to be found in any one case, as individual differences in reaction to hypoglycemia are great.

We shall report a few of our own observations. The effect of insulin on the emotional state varies widely from patient to patient. Furthermore, the emotional reaction does not necessarily correlate with emotional state preceding injection. Some patients, showing signs of fear before insulin, may remain apprehensive throughout the whole hypoglycemic period; others, showing the same signs, soon become quiet and relaxed under the effect of insulin; still others, at ease before injection, become almost frantic as hypoglycemia develops. One patient, who always resolved to rest quietly during hypoglycemia, became agitated, sat up in bed, and threw her arms into the air like a drowning person, just before going into shock. This was a daily occurrence with her. She described the experience of going into shock as a feeling of "submerging" or "being overwhelmed." It is apparent that the experience itself of going into shock produces fear in some cases.

The manner of going into shock varies. Some patients simply fall asleep and pass directly into shock from this state. More often, however, a state of clouded consciousness, lasting from a few minutes to an hour or more, precedes the shock. A similar, but shorter, state accompanies awakening. The clouding at times may be so slight as not to be readily apparent. Not infrequently we have conversed with patients in hypoglycemia who seemed completely lucid; yet on returning to them five minutes or so later, and finding them apparently unchanged, we found them oblivious of the previous visit. Such experiences indicate an impairment of retentiveness for new impressions, an anterograde or continuous amnesic state. As clouding progresses, the association processes become sluggish, retardation of speech appears, general reaction time increases, and verbal or motor perseveration may occur; finally, the patient passes into a severe psychomotor retardation tantamount to a stupor.

It seems characteristic of this clouded, stuporous state that perception and comprehension are impaired earlier than speech and expression in general. Patients showing no indication of comprehending simple questions will later surprise one by accurately reproducing them, explaining that they understood them originally, but had been unable to speak. Such phenomena resemble motor aphasias; we doubt, however, that motor aphasia, unless conceived in a very broad sense, is the correct term for this verbal unresponsiveness. The impairment is not limited to speech, but involves all motor spheres; no attempt is made to substitute either writing or gestures for speech. The experiments of Küppers furnish evidence in point. He induced three assistants to undergo hypoglycemic shocks. The number of shocks for the three totaled 36, several of which were allowed to proceed right up to the point of coma. The subjects reported the following general experiences: sensations of hunger and exhaustion; listlessness and distaste for activity, coupled with irritability in case rest was disturbed; and ideational paucity with impaired conceptual ability. More significant for the question at hand, however, is Küppers' observation that they failed to respond to painful stimulation (pinching) by any sort of defense movement. This is important because, after coming out of coma, the subjects not only remembered the stimulation, but described it as being quite painful. Küppers points out that with respect to pain sensitivity, these findings indicate a dissimilarity between the hypoglycemic stupor and the delirium preceding narcosis.

Perceptual anomalies are common. These embrace spatial, temporal, and motional distortions, and distortions of vividness and intensity. Spatial anomalies are reported by Benedek. They include distorted depth perception, in which persons and objects appeared to possess but the two dimensions of height and breadth, and micropsic and macropsic distortions of size. Temporal distortions are reported by Benedek and Pisk. Several of Benedek's patients related experiencing a slowing up in the flow of time (present). More commonly, however, they erred in estimating past time. One patient estimated 15 minutes as being several hours, and reported that during this time he had relived all his life experiences. A patient of Pisk, on the other hand, perceived everything in the environment as speeded up; music seemed to her to be played much faster than it actually was, and patients and nurses appeared to walk more rapidly than usual. Distortions in the perception of motion are mentioned by Benedek. The ability to merge the sequence of movements into a meaningful whole was diminished; normal movements seemed jerky, or else the moving object appeared to occupy several positions simultaneously. The patient describing these experiences likened them to some of the earliest movies in which the illusion of motion was imperfect. Anomalies in which sound seemed louder, colors more vivid, and contours sharper than usual also are reported by Benedek. It should be mentioned that patients experiencing these perceptual distortions usually realize that they are due to the insulin. The above-described perceptual anomalies resemble those characteristic of hashish and mescaline.

Aphasic and apraxic phenomena are encountered. They are more common to the awakening than to the preshock phase. Palisa and Sakel describe the gradual return of speech during awakening. The first signs are frequently the utterances of groans and other primitive sounds. Then come inarticulate babblings, which may be followed by a kind of baby talk. This latter has been considered a manifestation of an ontological regression; other similar manifestations are thumb-sucking, reporting one's age as of childhood, and mistaking the physician for one's childhood physician. Slightly later, a transitional phase of sensory and motor aphasia may occur; here, ungrammatical speech and literal paraphasia are the prominent features. The truly aphasic nature of these phenomena, which comes out during clinical examination, is also indicated by the patients' awareness of their expressive difficulties. A patient of Palisa, a student with medical training, referred to the condition expressly as motor aphasia. Another of his patients reported the experience in these words: "I don't know—I wanted to talk but always swallowed—the letters—the words—I couldn't get them out—I had them, though—talking turned into swallowing." The aphasic disturbances associated with shock, though most interesting from a psychological viewpoint, are difficult to study because of their transitoriness; they change from moment to moment and are usually accompanied by clouded consciousness. Occasionally, however, aphasias, and apraxias too, will continue well into the waking state. In two of our own patients a clear-cut motor aphasia persisted for several hours after consciousness had cleared. Only verbal expression, and not comprehension, was impaired. In addition to the motor symptoms, an amnesic aphasia persisted for some time. One of the patients referred to a pencil as "a thing to write." In a third patient we observed, in combination with a slight motor aphasia, a condition which might be termed *swallowing apraxia.* This condition persisted for about an hour after she had fully regained consciousness. Several times she tried to drink; but although she tipped her head back and made all sorts of mouth and tongue movements, swallowing did not occur. Since she was not at all resistive, commented on her inability to swallow, and swallowed reflexly when tactually stimulated on the pharynx by a tongue-depressor, it appears that her difficulty lay in the volitional initiation of the swallowing act. We believe that these swallowing apraxias are fairly common, but because of their fleetingness and the clouded condition of the patient when they occur, they usually cannot be demonstrated as apraxias.

Amnesic phenomena, some of which have already been mentioned, occur. They include complete amnesia for deep shock and impaired retentiveness for impressions in the preshock and awakening phases. These are to be expected, of course, because of the clouded condition of the patient at such times. Retrograde amnesias for periods of varying lengths may be present immediately following shock; usually, however, they clear up later.

Various reactions which appear to be manifestations of disinhibition are observed. Some of these resemble phenomena common to alcoholic and other toxic conditions. In three male patients we observed a state of uncontrollable excitement developing in the preshock phase a couple of hours after injection. The state was strikingly similar in all three individuals, and in each individual occurred day after day with almost photographic uniformity. It lasted for about 20 minutes, during which several persons were required to hold the patient in bed. One patient exclaimed to his nurse: "Take off your glasses, I must hit you!"; and another cried in response to the physician's attempt to quiet him: "Doctor, I can't stop it—I can't." These states disappeared when the onset of shock was hastened by increasing the insulin dosage, but returned again in one patient whose dosage had to be decreased to prevent convulsions. They were characterized by clear consciousness; subsequent recollection of happenings was good. Fear symptoms were absent, and there appeared to be no paranoid basis for the states. Rather, they seemed to be simply an enormous, uncontrollable motor discharge. The patients later described their subjective experience as that of having lost control of their actions. The detached, impersonal nature of these excited states, the patient's awareness of the futility and undirectedness of his behavior, differentiates them from epileptic twilight states and alcoholic and other toxic psychoses. In this respect this type of hypoglycemic excitement more closely resembles the organic 'driveness' found in certain diseases of the subcortical ganglia, such as epidemic encephalitis. Quite likely temporary changes in the subcortical ganglia are involved in the above-described hypoglycemic episodes.

Other types of impulse release have also been reported. Palisa observed in the awakening phase in a number of cases a sort of frank eroticism which did not, however, extend to gross sexuality; rather, it was a bid for affection. Palisa comments that this was in direct contrast to the patient's usual schizophrenic seclusiveness. Orenstein and Schilder report the appearance of hidden sexual material, *i.e.* homosexual transference. Palisa also mentions, in connection with about this same phase of the awakening period, the sudden appearance and disappearance of aggressive attitudes toward the environment.

A feeling of relaxation, accompanied by hypomanic attitudes, often follows awakening from shock. It is our impression that such attitudes are a favorable sign, as we have encountered them especially in cases showing improvement. Furthermore, we have observed a phase of slight elation, lasting from several days to weeks, following termination of treatment in recovered cases.

Recent findings suggest possible prognostic value for certain psychological tests in insulin-shock treatment. Bolles, Rosen, and Landis report indicative results from a battery of performance tests. These tests, designed to measure the capacity for "abstract" behavior, had previously been found to show characteristic differences between normal subjects and schizophrenic patients. After applying the tests to a series of 19 schizophrenic patients prior to insulin therapy, Bolles, Rosen, and Landis compared the test results with the subsequent outcomes of treatment. They summarize their findings as follows: "Those patients whose performances were very poor on these tests tended to show no improvement under insulin therapy. Among those patients whose performances were relatively superior, the number of improvements was larger." Similarly, Piotrowski, on the basis of 25 pretreatment records, finds suggestions of prognostic value in some of the Rorschach indices. Among those indices on which a high score seemed suggestive of favorable prognosis were whole responses, human movement interpretations, and color responses; among those indices in which a low score appeared to suggest a favorable prognosis were rare detail responses.

Metrazol Treatment

History. The metrazol convulsion therapy for schizophrenics was discovered by Meduna. The therapy is based on the assumption of a mutual antagonism between the schizophrenic process and epilepsy. Several reports suggested such an antagonism: It had been observed that when epilepsy is complicated with a schizophrenic syndrome, convulsions become rare or cease entirely; cases of catatonia had been known to recover after epileptiform convulsions; typical epileptiform convulsions are rare in schizophrenics. Meduna, reasoning from these reports, deliberately produced epileptiform convulsions in schizophrenics. Originally he employed camphor as a convulsant; soon, however, he abandoned it for metrazol, which produced a more immediate reaction. He first published on the treatment in 1935.

Technique. The technique of metrazol treatment is relatively simple. The convulsion is evoked in bed. Attendants, in addition to the physician, should be present to protect the patient. Treatment is begun with an initial dose of from 3 to 5 cc.'s of 10% metrazol solution, the dosage depending on the sex and general condition of the patient. Women usually require less than men. Frequently the dosage has to be increased later, as a tolerance for the drug is built up. The metrazol is given rapidly by intravenous injection. Within a few seconds the patient coughs, becomes bewildered, restless, fearful, and confused, and then goes into convulsion. During the convulsion he is unconscious. The seizure, which is of the epileptiform type, lasts from about 30 to 80 seconds. Tongue-bites are prevented by inserting a gag between the teeth; this can easily be done, as wide opening of the mouth invariably occurs during the tonic phase of the seizure. After the convulsion the patient usually remains comatose for several minutes; then, either immediately or after an intermediate twilight state of clouded restlessness, he falls asleep. Convulsions are induced two or three times a week. A course of treatment comprises from 12 to 30 seizures, or, in terms of time, from 4 to 15 weeks. Meduna urges continuing treatment through three additional convulsions after recovery, so as to stabilize the effect.

Neurological Aspects. The sequence of neurological events occurring during the metrazol convulsion has been carefully analyzed by Strauss, Landis, and Hunt by means of ultrarapid cinematography and electromyography. They found that the convulsion, lasting from 45 to 60 seconds, consisted of three distinct, though somewhat overlapping, stages: first clonic, tonic, and second clonic. The first stage, with an average duration of 10 seconds, consists in the alternating contraction of agonistic and antagonistic muscle groups at the rate of two to four two-phase movements a second. The tonic stage, with an average duration of 5 to 10 seconds, is characterized by simultaneous high potentials in all muscles. The second clonic stage, with an average duration of 30 to 40 seconds, consisting in the alternation between simultaneous contraction and relaxation of all muscle groups, represents an alternating disappearance and reappearance of the continuous innervation of the tonic stage. The alternation is rapid at the beginning (12 to 14 contractions a second), gradually slowing to one or two a second towards the end, and terminating in complete relaxation. Careful analysis reveals definite differences between the two clonic stages. In the first, adduction and inward rotation of the limbs is associated with flexion of the knee, elbow, and head; in the second, adduction and inward rotation of the limbs is associated with extension of knee, elbow, and head. Furthermore, amplitudes of movement are greater in the first stage. These authors, on the basis of their findings, conclude that the first clonic stage is probably the expression of cortical stimulation, while the second is not. The second appears to be a state of repeated interruption of the decerebrate rigidity which was present in the antecedent tonic stage. The tonic stage seems to be one of continuous decerebrate rigidity. The fact that arm flexion, even up to 90°, sometimes occurs does not contradict this stage; decerebrate rigidity in humans is frequently accompanied by arm flexion.

Angyal regards the first clonic stage as a psychomotor condition. The writers, while in thorough agreement as to the presence of psychomotor agitation after injection, regard this agitation as part of the aura rather than of the convulsion proper. Individual convulsion patterns apparently vary considerably. Meduna reports tonic stages ranging from 7 to 26 seconds, and makes no mention of the first clonic stage. We have observed extremely short first clonic stages, as well as relatively long tonic stages, in certain cases. Sometimes the tonic stage begins with torsion of the head and body to one side.

Smooth, as well as striated, muscles are involved in the convulsion. Emptying of the bladder and ejaculation without erection in the tonic stage, and defecation at the end of the second clonic, are not uncommon. Severe blanching of the face, a vasoconstriction manifestation, is often the first significant sign after injection. Sometimes, however, excessive reddening of the head and trunk, which may be accompanied by the appearance of goose flesh, occurs instead. Later, during the second clonic phase, cyanosis predominates. Meduna attributes the cyanosis to impaired breathing in the preceding tonic stage. Pulse and blood pressure, which can only be measured during certain parts of the seizure, show characteristic changes. Shortly after injection, pulse rate may increase. It becomes still more rapid after the convulsion is over. Blood pressure is raised. Meduna reports rises of from 5 to 15 mm. Hg in diastolic, and from 20 to 30 mm. in systolic, pressure immediately after the seizure. The pupils also undergo changes; in fact, the metrazol seizure affords an unusual opportunity for studying pupillary reactions in the epileptiform type of convulsion. Meduna asserts that the pupils are usually dilated maximally and that the pupillary reflex is invariably absent.

While Meduna's description holds roughly, we agree with Georgi and Strauss that it is not completely adequate. They report wide, fixed dilation during the tonic and clonic stages, followed immediately by contraction, with continued unresponsiveness to light, after the first inspiration. They also report a hippus, *i.e.* a fluctuation consisting in rapid alternate dilatation and contraction of the pupils, occurring before recovery to normalcy. Our own observations indicate the following general picture, from which, of course, deviations often occur. Often the pupils are dilated before injection, presumably because of fear; however, if they are narrow before injection, they ordinarily dilate slightly before the onset of seizure, usually at the moment of coughing. With the onset of convulsion they suddenly dilate further, but do not reach a maximum until the middle of the tonic stage. From this point on they fail to react to light. With the first deep breath after the convulsion they often contract suddenly, but only for a few seconds; then either a hippus, or successive contractions and dilatations, each lasting several seconds, may occur before normalcy is reached. These observations lead us to the conclusion that the pupillary changes during the metrazol convulsion are the expression of sympathetic-parasympathetic imbalance, and that the so-called fixed pupil is essentially a "pupillotony," as it is in all epileptiform convulsions.

During the recovery period following seizure, changes in the reflexes, both deep and superficial, are present. A completely flaccid state usually follows the convulsion. In this state the Babinski reflex cannot be elicited; it appears later, however, while the patient is still unconscious, and persists for several minutes. Foot clonus is established somewhat earlier. In our experience, the most persistent pyramidal sign following the seizure has been the absence of Mayer's reflex (adduction of the thumb as a result of passive flexion of the first phalanx of the fourth finger). Frequently, the abdominal reflexes are missing for several minutes, and during this otherwise flaccid state, the teeth remain tightly clenched. The clenching persists for some minutes, during which the mouth gag cannot be removed except by force.

If the dosage is insufficient, as is sometimes the case since tolerance for metrazol increases during treatment, inadequate reactions result. Angyal and Gyárfás distinguish two degrees of such inadequate reactions, psychic and abortive-motor. The former consists of vasomotor phenomena which are usually accompanied by severe feelings of anxiety; the latter consists of a few clonic twitchings, or, as we have sometimes observed, a short tonic stage, in addition to the vasomotor reactions and anxiety. Both forms are undesirable in our opinion. They tend to augment the fear of treatment and are often followed by extended twilight conditions and extreme agitation. Only in rare instances have we observed improvement, instead of setback, following them.

Mechanism of the Convulsion. The mechanism of the metrazol convulsion remains obscure. Speculation concerning it, however, is not wanting. Meduna, assuming a practically identical effect for metrazol and camphor, quotes Hildebrand on the effect of the latter drug as follows: "Besides the brain cortex the autonomic centers in the diencephalon are strongly stimulated." Denyssen and Watterson consider the chief effect of the metrazol to be vasoconstriction. Experimenting on 32 patients undergoing metrazol treatment, they administered amyl nitrite and histamine in conjunction with the metrazol. These drugs, which had a vasodilatory effect, opposed the action of the metrazol and in some cases prevented the convulsion. On the basis of their findings they conclude that metrazol acts solely through the vasomotor center and that the convulsion is due to a vascular spasm. Their findings and interpretation support the widely entertained view that epileptiform convulsions are the immediate effect of brain anoxemia, the anoxemia resulting from vascular spasm which impedes cerebral circulation. If it be granted that the convulsion is mediated through vasoconstriction, there still remains the problem of how the metrazol reacts on the vasomotor center. One would suppose that transmission is through the blood stream. Yet, we doubt that this is the actual mechanism of transmission because of the short latency of the convulsion in some cases. We have frequently observed convulsions occurring eight seconds, and in some instances seven seconds, after the beginning of the injection, and Barnacle reports convulsions as soon as five seconds after injection. Such short latencies would hardly allow time for the blood to flow from the vein in the arm to the vasomotor center in the medulla. Mediations through various autonomic reflexes suggest themselves as more likely possibilities. Animal experimentation seems to hold the key to the solution of the problem, an answer to which should cast new light on the complicated question of the epileptiform mechanism, especially in cases of reflex epilepsy.

Psychological Aspects. The psychological accompaniments of the metrazol convulsion may be grouped conveniently into those associated with the aura, or preconvulsive state, and those of the postconvulsive state, the patient being unconscious during the convulsion itself. The most commonly reported and most striking feature of the aura is a feeling of alarm, manifest in the facial expressions, spontaneous outcries, and subsequent accounts of the patients. A patient of Schilder always exclaimed: "Mother, mother, help me." Such utterances seem to be more common when the onset of convulsion is delayed. The subsequent descriptions of the aura by patients vary considerably, but many indicate anxiety and a life threat. Schilder's patients described the first signs of the aura as a feeling of "electricity playing all over their bodies," or as an impression that the room was "filled with dazzling white light." Others have described the aura as an "infernal chill," "sinking slowly into a hole," "the anxiety of feeling one's self going." Several of our patients reported vertigo in which the room seemed to revolve, and one of them thought the walls were coming down on her. On the other hand, Gillespie, who underwent a single metrazol convulsion for the purpose of self-observation, describes a somewhat milder experience:

> After the injection of 10 c.cm. of a ten per cent solution I felt my body and limbs coming to lie straight in the bed and my head turning to a central position. Then very rapidly something seemed to move in my arms and thorax and to pass up to the base of my neck, where it stopped and increased in intensity. This sensation was not painful, but felt very clear and circumscribed, half-way between thought and sensation like the ideas in delirium. Unconsciousness developed very quickly but otherwise its onset felt like the coming of normal sleep and was not resisted.

Our impression is that fear of treatment increases after several convulsions, and that abortive seizures, in which consciousness is not lost, excite more intense fear than typical epileptiform ones. The intense emotional experience of the aura gives rise, in many instances, to severe fear of injection. In several improving patients we observed a transitory reappearance of psychotic behavior patterns during this preinjection-fear state. With increasing improvement fear still remains, though it may be better controlled. In fact, even after patients fully appreciate the beneficial effect of the treatment, they tend to continue the course only with reluctance. On the other hand, a few emotionally deteriorated schizophrenics do not seem to mind treatment at all. One of our patients of this type actually seemed to look forward to the injections and, although he showed no improvement at all, declared in a stereotyped manner after each treatment that he felt much better. The emotional attitude of patients towards metrazol contrasts with that towards insulin. Many of our improving insulin patients urged continuance of treatment.

The postconvulsive state is characterized by clouded consciousness and retarded psychomotor activity. This state, so far as we can tell, is similiar to postconvulsive twilight states following other types of epileptic fit. It does not follow immediately upon termination of the convulsion, but is preceded by a coma of from a fraction of a minute to several minutes in duration, and often by a few minutes of sleep in addition. If sleep follows the coma, the ensuing clouded state tends to be less pronounced. This clouded state presents characteristic symptoms which become apparent on probing. Speech expression and comprehension are impaired. Fully as striking are amnesic aphasias in which difficulty is experienced in naming recognized objects. Schilder maintains that in most cases patients have greater difficulty in naming parts of their own bodies than in naming other objects. Retrograde amnesia for the injection, as well as for events preceding it, is characteristic. This amnesia usually clears up, however, and memory of both the injection and aura returns. Gillespie describes his own experience as follows:

> On awakening I had a mild occipital headache, some aching of the mandibular joints and was conscious of a pungent smell at the back of my nose. At first I could remember almost nothing of the morning's events including the injection, and even the day before seemed indistinct, but otherwise feeling and comprehension seemed normal. Remembrance of the injection returned within a few minutes and of the other happenings of the morning more gradually, but even ten hours afterwards there was some retrograde amnesia. For the remainder of the day the feeling was distinctly unpleasant, with headache, anorexia and malaise.

Cohen asserts that after the convulsion the cognitive functions return in a definite order, which is as follows: esthesia, prosexia, gnosia, praxia, and mnesia. He finds that immediately after the convulsion pinpricks are not responded to; shortly after this they are responded to, but only by indefinite, mass movement. As time goes on, responses to pinpricks become more localized; they pass progressively through the stages of withdrawal of the pricked limb, scratching of a broad area contiguous to the point stimulated, and, finally, localized scratching of the exact point. During the period of inexact tactual localization he found corresponding inexact localization in the auditory and visual spheres. Addressed by name, patients turned their heads, but not necessarily towards the sound source; presented with objects they appeared to look "through" rather than at them. After the other symptoms had disappeared, amnesia, both retrograde and anterograde, was still evident.

Wittman has studied the course of the metrazol postconvulsive confusion psychometrically. Using a battery of tests of attention, rote memory, retention, substitution, and paired associates available in different forms, she tested each of 30 patients before the convulsion and again at intervals ranging from one-half hour to 48 hours following it. Average scores indicated extreme inefficiency a half hour after the convulsion, with recovery to the preconvulsive level still not complete at the end of four hours. In a second part of the study she tested patients 24 hours after each convulsion with a view to determining rate of improvement during the course of treatment. Individual variations were noted, but average scores indicated a gradual improvement up through the ninth treatment, which improvement she attributes to increased interest, attention, and coöperation. Data beyond the ninth treatment were open to ambiguous interpretation.

Results. The metrazol therapy presents the same difficulties of evaluation as the insulin. We can but present a few statistics with the hope that they are representative. Meduna, reporting on the first 110 treated schizophrenic cases, indicates remissions in 54 (49%). Analyzed according to duration of psychosis prior to treatment, his data reveal the following percentages of remission: up to six months, 92%; six to twelve months, 86%; one year to one and a half years, 43%; one and a half to two years, 55%; two to three years, 25%; three to five years, 27%; over five years, 0%. Analyzed according to clinical type, the percentages of remission are: simple type, 51%; paranoids, 55%; catatonics, 30%; hebephrenics, 67%. Beckenstein (5) presents the following results for 218 cases treated at the Brooklyn State Hospital: less than six months' duration—13% recovered, 35% much improved, 44% improved, 9% unimproved; six months to two years—1.4% recovered, 15% much improved, 43% improved, 40% unimproved; over two years—.8% recovered, 5% much improved, 29% improved, 65% unimproved. He claims best results in paranoids of recent onset and poorest in hebephrenics regardless of recency of onset. Meduna and Friedman report the combined results from 2937 cases treated in American and European hospitals. The gross American data indicate 19.86% full remissions and 38.43% improvement.

Analyzed according to duration they reveal the following: less than six months, 60.95% complete remission and 20% improvement; six months to one year, 36.82% complete remission and 23.13% improvement; over one year, 8.36% complete remission and 37.76% improvement. The gross European data indicate 30.37% full remission. Analyzed according to duration they show 49.66% full remission for cases under, and 13.32% for cases over, 18 months. Mortality for the total 2937 cases is given as .29%.

Dangers. Meduna makes the claim that the metrazol treatment is free from danger. He bases his contention on the fact that his data include no deaths, and that out of a thousand convulsions the only deleterious effects, aside from occasional backaches in which no injuries to the ligaments were found, were two arm dislocations and a dislocation of the jaw. Others report more serious consequences. Deaths during treatment are reported in from 0 to 2.2% of cases. The reported probable complications leading to deaths include pneumonia, lung abscess, and pulmonary embolism. Other complications include dislocations and fractures. A vertebral fracture was detected by Wespi, who pointed out the necessity of paying greater attention to complaints of backache. Nevertheless, fractures of spinal vertebrae were considered rare occurrences until very recently, when their incidence was investigated by Polatin, Friedman, Harris, and Horwitz. These investigators, through routine X-ray examinations, found a high percentage of compression fractures in the thoracic spine. They report fractures—some of them slight—in 22 out of 51 patients (43.1%) and state that the degree of injury usually bore no relation to intensity of backache. Such findings may prove a serious objection to the use of metrazol, unless attempts to avoid this complication are successful.

Comparison of Insulin and Metrazol Therapies

Many workers in the field of shock therapy point out that the metrazol therapy is the easier to manage because the individual treatments are less time-consuming and require less nursing care. A metrazol treatment can be completed in half an hour, with little attendant danger of post-convulsive complications. An insulin treatment, on the other hand, not only consumes several hours, during every minute of which the patient must be carefully watched, but also necessitates constant observation throughout the day because of the danger of after-shock. A more important consideration, however, is the question of the respective therapeutic values of the two treatments. At present, no absolute statements can be made on this point. Both are of value. Cases refractory to one may respond to the other, and vice versa. For catatonic cases convulsions seem to be especially helpful. Our own impression—and this is supported by the two large surveys presenting together results from both therapies —is that, in general, the insulin-shock treatment is the more efficacious.

COMBINED TREATMENT

In an effort to retain the desirable features of both treatments, while eliminating some of the undesirable ones, Georgi and Georgi and Strauss have developed a combined insulin-metrazol therapy. The usual dose of insulin is given, and a metrazol convulsion is induced about an hour and a half later. Hypoglycemia is then terminated. Termination can usually be accomplished, in such instances, without tube-feeding, as the patient usually awakens after the convulsion and can be induced to drink the sugar solution. Georgi and Strauss advise either giving insulin and metrazol together two or three times a week or giving insulin daily, with metrazol in addition on alternate days. They recommend the former for cases responding with violent seizures. Braunmühl recommends, for schizophrenics of recent onset, starting out with insulin alone and, later, after about 20 shocks, adding a limited number of metrazol convulsions if necessary. The combination type of therapy offers the following advantages: It obviates the fear reaction so common in the unmitigated metrazol therapy. Presumably, the somnolent state induced by the insulin tends to eliminate the fear-evoking experiences associated with the metrazol injection. The combined method lowers the threshold for convulsions, thus enabling an appreciably smaller metrazol dosage to be given. Finally, the combination therapy, in employing both insulin and metrazol, reaches cases which might be refractory to either one alone.

We are convinced that in many cases a combination of the two treatments is advisable. Such combined treatment, however, can hardly be prescribed in a blanket manner, as convulsions may have undesirable, as well as desirable, effects. Regulation should be based on the patient's reaction to a trial convulsion.

THEORY

Speculation concerning the actual nature of the mechanisms by means of which the pharmacological shock treatments effect cures has not been wanting. Much of it is vague. Each of the hypotheses tends to reflect its author's viewpoints toward the etiology of schizophrenic syndromes. Hypotheses range from the essentially physiological or organic to the essentially psychological. We can but mention a few. Among the physiological theories of insulin effect are those of Sakel, Demole, Georgi, and Freudenberg. Sakel suggests the possibility of a general lowering of neural thresholds in psychotics through adrenal activity, which revives phylogenetically ancient and infantile pathway patterns latent in normal waking thought. Insulin, being an adrenalin antagonist, is supposed to reverse the process. A more definite and experimentally verifiable hypothesis is offered by Demole. He points to a disturbance in cerebral respiration preventing the oxygenation of the toxic products of metabolism, which accumulate and give rise to the schizophrenic symptoms. He suggests that insulin stimulates the oxybiotic processes necessary for detoxication. Georgi, on the assumption that schizophrenia is characterized by relative impermeability of cell membranes, suggests that insulin stimulates the exchange between the cells and their surroundings. Freudenberg combines the hypotheses of Demole and Georgi into the following:

> In schizophrenia there is probably a primary disturbance in cerebral respiration, perhaps due to some lack of oxygenating substances. This disturbance leads to a collection of toxic products, probably originating from the protein metabolism. Insulin therapy induces the oxybiotic processes necessary for detoxication and also an irritation of the cell membranes, which results in an increased exchange between the cells and their surroundings.

Among the psychological hypotheses are those of Glueck and Schatner. Glueck considers the various emotional and motor phenomena occurring during hypoglycemia as constituting an emotional catharsis and states that the entire situation might be viewed ". . . as a highly condensed recapitulation of the process by means of which the fate of the ego-dystonic impulses is determined, a process which takes place normally, in the case of ontogenetic development, and artificially, in the course of psychoanalytic therapy." Schatner believes the efficacy of the insulin-shock treatment to lie in its rendering the patient sick, helpless, and dependent. This state predisposes him to a transference in which the physician becomes the mother surrogate and, as such, can take advantage of the relationship to introduce suggestive therapy. We believe that psychological factors are involved in insulin therapy, as in almost every form of medical treatment; however, that the curative effect of such a definitely physical treatment as insulin shock is purely psychological seems *a priori* rather improbable. Furthermore, we question Schatner's explanation, inasmuch as some patients become relaxed and even lucid for short periods after the first small dose, which renders them neither sick nor helpless.

A physiological hypothesis of the effect of metrazol is offered by Meduna and Friedman. They suggest that the therapeutic effect may be due, in part, to increased cerebral oxygenation as the result of vasodilation. Schilder offers a somewhat more psychological interpretation: "The victory over the death threat, expressed in the epileptic fit and lingering on in the perceptual and aphasic difficulty, enables the individual to start life and relations to human beings all over again." He characterizes the therapy by stating: "The treatment is an organic treatment reflected in psychological attitudes."

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THE FRONTAL LOBES AND CONSCIOUSNESS OF THE SELF *

by

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THE FRONTAL LOBES have been under recurrent scientific investigation since the time of Gall and Spurzheim, but particularly so since the first World War. After the conflict, large numbers of healthy young men who had suffered penetrating wounds of one or both frontal lobes were available for study, and could be compared with others who had been injured in other parts of the brain. Feuchtwanger, Kleist, and Goldstein have given us several profound studies. This war material was open to objection, however, on account of the shattering effects on the brain of high-sped projectiles. More satisfactory observations later came into prominence following the frontal lobectomies, both unilateral and bilateral, beginning with Dandy's case (1930), later reported by Brickner. Rylander wrote a fine monograph on the basis of 32 unilateral cases from Olivecroná's Clinic. Nevetheless, there has been no uniformity of opinion as regards the functions of the frontal lobes, and there are scarcely two individual investigators who have been able to describe in similar terms the mechanisms underlying the behavior of patients following removal of significant amounts of frontal lobe tissue. It was only following the pioneer observations of Egas Moniz, who was able to relieve certain patients of mental symptoms by a destructive operation carried out upon their frontal lobes, that renewed study of the whole question brought to light a number of points of view that had previously been neglected. Aside from the rather transcendental ideas put forth by Goldstein and by Kleist (the latter linked them rather romantically with the Brodmann chart of cortical architecture), most of the studies focused their attention upon the intellectual functions since these were supposed to be mediated by the frontal lobes. However, the works of Brickner and of Rylander showed rather conclusively that defects in intelligence as ordinarily meas-

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ured were not sufficient to explain the behavioral difficulties that the patients suffered following prefrontal lobectomy. Furthermore, while these and other authors discussed at length the functions of the frontal lobes, they were in the main describing the behavioral adaptations of individuals, presumably previously normal, who through injury and disease, had been deprived of an important part of their functioning cerebral structure.

We believe that there are inherent defects in the lobectomy material. While a clean-cut lobectomy permits of a splendid localization of the lesion, nevertheless the preexisting cerebral disturbance, whether it was due to abscess, tumor, scar, or whatnot, must have brought about a sufficiently severe derangement of the cerebral functioning to require operation, and furthermore it was by no means certain that the injury had been limited to the part removed. Finally, these operations occurred mostly in individuals who previous to the injury or disease had been for the most part normally adapted in society, able to handle their frustrations without too much difficulty, and showing a normal balance of their attention between inwardly and outwardly directed interests.

The procedure of Egas Moniz, as modified by us and by other investigators, has thrown a flood of new light upon the functioning of the frontal lobes. Aside from the purely therapeutic effects of the operation, the procedure meets the requirements of the perfect experiment. The brain is anatomically normal to begin with. There is no significant trauma or shock. The incisions are simple, clean-cut, and almost bloodless, and can be located exactly. The patient is encouraged to talk throughout the operation, and tests of various sorts can be run both before and at intervals following operation. So much for the operation. As far as the patients are concerned, we are dealing with individuals who show various abnormalities of thinking, feeling, and behavior, and we can study the alterations that occur in such activities as the result of operation. The study of such cases presents a number of points of interest to the student of psychosomatic relationships.

In a number of previous publications, we have discussed the various aspects of personality that are altered by the operation of prefrontal lobotomy. We have erected the hypothesis that the frontal lobes are concerned with the projection of the total individual into the future. This concept envisages not only the recognition of the goal to be sought, and the charts of the means to attain the goal, but also the final critique as to how nearly the real has approached the ideal. This concept makes frontal lobe function definitely an intellectual one, but of a higher order than the mere solving of problems and the recollection of previous knowledge. Penfield speaks of the frontal lobes as being concerned with "planned initiative" and Tilney and Riley use the words "instigator of progress."

We like to group many of these functions under the term *foresight*. However, there is a certain dichotomy here: foresight is retained in large measure for the objective, but often reduced for the subjective. While the operated patient may be able to function at a high level of efficiency in the matters of business, art, law, mechanics, and the like, nevertheless, there is a certain disturbance in the relationship of the individual with himself that permits certain characteristics to appear, characteristics which may or may not be offensive to others, but about which the individual is either unaware or unconcerned. While he may have a good grasp of cause-and-effect relationships in regard to impersonal or outside events, and can foretell the results of a proposed procedure where inanimate objects or other people are concerned, still he is either obtuse or indifferent to the effect that he himself is about to produce on other people. He is greatly lacking in what is termed self-consciousness. The following is a case in point:

Case 1

A school teacher and tool designer suffered from such a severe obsessive-compulsive state for a period of 30 to 40 years, that he was reduced, before operation, to performing simple jobs around the house and running errands for his wife. A year following operation, he came before the Harvey Cushing Society in Memphis and exhibited a drawing of a machine that he had recently patented, a wheel dressing device for elliptical bearings. The machine eliminated one step in the manufacture of certain bearings and had distinct possibilities in the automotive field. He had been working with the idea for several years, he said, but had been unable to overcome certain difficulties until some months following operation when the key came to him; he sat down at his drafting board and worked out the machine in all its details. He thus demonstrated excellent capacity for visualization, for seeing in his mind's eye a complicated object and reducing it to a working drawing. It is doubtful whether anybody in the audience understood just what the machine was supposed to accomplish or could erect in his own consciousness a picture of what the machine would look like.

When this patient had finished expounding his device, he turned to the subject of a health system for rational living and proceeded to talk at length to this audience of neurosurgeons upon the dietary and spiritual assistance that had enabled him to perfect his machine. In spite of the laughter provoked in his audience by his witty sallies, he was unable to appreciate the ridiculous position in which he had placed himself and later boasted of the attention he had received.

This case, which is only the most striking of many, serves to focus attention upon the problem of the frontal lobes and the relationship of the self with the self. It is only one aspect, but nevertheless an important one. Before proceeding to discuss in fuller detail the nature of this problem, it is well to describe briefly the operation of prefrontal lobotomy and also to point out what tracts in the nervous system are probably severed.

THE OPERATION

The operation of prefrontal lobotomy as now carried out consists of the placing of burr holes over the coronal suture on either side of the skull in the temporal region and carrying out a subtotal, subcortical amputation of the frontal lobes in the plane of the coronal suture. The operation can be performed under local anesthesia in cooperative patients; it leaves practically no scar, and it is seldom accompanied by any troublesome bleeding. The most disagreeable sensation seems to be the drilling, and in the apprehensive patient, this occasionally becomes unbearable. After the opening is made, and the dura incised, "soundings" are taken to determine the location of the falx and the orbital plate of the skull. An incision as deep as the midline may lacerate the anterior cerebral artery, while if the instrument drops down behind the sphenoidal ridge, it may injure a number of small penetrating vessels from which serious hemorrhage may arise. If the ventricle happens to be tapped, the incision is made slightly anterior to it. The incision of the frontal lobes is made on both sides in the plane of the coronal suture. A contrast medium is introduced into the incision and roentgenograms are taken for purposes of precise localization.

From the anatomic point of view, this procedure produces damage to the cortex only where the instrument penetrates and where it cuts partly through the cortex at the base of the frontal lobe. The subcortical transection of the frontal pole cuts through large areas of white matter, for the most part, we believe, association fibers connecting the frontal lobes with other areas of the cortex, including a certain number of callosal fibers. There are two projection fiber systems, however, that enter definitely into the picture, although the relationship of these systems to the operative result is not yet altogether clear. The first of these is the fasciculus cinguli which has been suggested by Papez as a direct pathway between the hypothalamus and the cortex. The other is the anterior thalamic radiation, forming a two-way connection between the frontal pole and the nucleus medialis dorsalis of the thalamus. Recent experiences seem to indicate that when the fasciculus cinguli is spared there is much less dullness and disorientation and fewer sphincter disturbances than when this fiber bundle is cut. We believe that the anterior thalamic radiation is the all-important structure concerned in the personality changes brought about by operation. This bundle makes up a large portion of the anterior limb of the internal capsule. Starting as a compact fasciculus in the dorsomedial area of the thalamus, it fans out brush-wise and can be traced by defibrillation (Hultkrantz) toward the frontal pole. We believe that this bundle linking the thalamus and the frontal lobe mediates the affective component of ideational activities.

Postoperative Behavior

The postoperative course is usually very even and the patient is often discharged before the tenth day. During this period, there is gradual resumption of alertness and interest in outside things; previously apprehensive patients are entirely at their ease although they may persist in their mannerisms, such as rubbing their hands or even brushing "bugs" off the counterpane. Such mannerisms, we believe, represent motor patterns of behavior, the neural basis of which is rather firmly established and relatively untouched by the operative procedure. Sometimes it is only after a period of months that these useless activities subside and then apparently because they no longer serve a purpose in helping the patient to a perpetually sought security.

Fixed ideas may also persist unchanged for some time after operation. However, the affective toning of these ideas is definitely altered. The ideas are there but they are emotionally bleached as in the following case:

Case 2

A paranoid woman complained that acid was being sprayed on her neck, that gases were being pumped into her room, and that airplanes were dropping poison on her as they passed over her home, that she was being spied upon and persecuted by the G-men, and so on. For several weeks after prefrontal lobotomy, she persisted in describing these persecutions. However, her attitude toward them was one of amusement rather than fear, and she could tell about these experiences with a smile. After the disappearance of the obsessive quality of the ideas, she was still able to recollect them and was able to describe rather graphically how they had arisen in the first place: "I was all tired out, I guess, and something happened to me that gave me a little start. I wondered what it meant and didn't quite know how to explain it, and I kept on thinking about it and trying to hitch it up with little events that had passed almost unnoticed, and I began to see a general meaning behind it all; and then one thing led to another and I got more and more frightened all the time and couldn't relax. I really felt they were after me."

This sequence of events, postoperatively, namely: first the bleaching of the emotional component; then the gradual disappearance of the ideas followed by relinquishment of the motor patterns, has been observed too frequently to be neglected. It should be emphasized that in practically all instances the fears are in relation to the safety of the patient. They imply a consciousness of the self that has become exaggerated to an abnormal extent.

This same mechanism of pathologic egocentricity is seen with slightly different signature in many cases of involutional depression, where feelings of guilt and nihilistic delusions occupy the center of the stage and where the patient is unable to escape from a torturing feeling of inadequacy and failure. In these cases also, the image of the self looms so large in the patient's consciousness that nothing on the outside is able to overcome the preoccupation. Preoccupation of the self with the self is outstanding also in cases of hypochondriasis and many anxiety states and in conversion hysteria, except that here the consciousness of the self is somaticized in that the self is now considered as a collection of organs that in the patient's mind are functioning badly.

Case 3

One of the most striking examples of hypochondriasis occurred in a 59-year-old cashier who complained bitterly, constantly, and clamorously about her hemorrhoids, begging for morphine to dull the pain and for an ice bag to be placed against the anus to control the horrible sensations. Actually there were only a few atrophic skin tabs, but the general condition of the patient was so poor that carcinoma of the colon was suspected until it was ruled out by a gastrointestinal series. After prefrontal lobotomy, the patient complained no more of her hemorrhoids and upon being asked about them and her previous complaints, she stated that they had been with her for years, but that when she had become depressed, they seemed to annoy her and to trouble her more and more until she was actually afraid that a cancer might be developing. Before operation, the patient was disoriented and delusional, and had been unable to work for four months, but she returned to her work at the end of six weeks and has been steadily employed for four years, making a rather satisfactory adjustment, and having few physical complaints except tiredness and insomnia.

Examples of similar behavior could be multiplied but to no particular end. We believe that it is worth while to cite briefly another expression of the unpleasant consciousness of the self that disappeared following prefrontal lobotomy. In this case, the mechanisms underlying the obsessive ruminative tension state were more clearly apparent than in most individuals.

Case 4

Abbie M., 32-year-old telephone operator, had suffered for 12 years from a belief that she had syphilis. Positive reassurances and negative Wassermanns had no effect. She was desperate and indeed was preoccupied with the idea of committing suicide. Prefrontal lobotomy was carried out in December, 1936, by the Egas Moniz technique, with resulting improvement, so that she was able to return to her work as a telephone operator in about six weeks.

Later investigation of this case gave us an indication of why the phobia developed. Abbie was a big, strapping mountain girl, six feet tall and weighing 250 pounds, quite shy and self-conscious in comparison with her more attractive sisters. Twelve years before operation, she had been carried off her feet by one of her sister's beaux and had indulged in some passionate love-making. With a mixture of pleasure in the experience, remorse and guilt in the matter of sisterly beau-ownership, and love and hatred of her sister who was more attractive than she, Abbie was in a decidedly overwrought condition, when, a few days later, she developed a rash over the sternum where the telephone instrument rested. The rash lasted only three days, but the word syphilis flashed through Abbie's mind and remained with her constantly. Abbie's knowledge of syphilis was quite rudimentary, but what syphilis meant to her in terms of punishment for her deed, social ostracism, the relinquishment of marriage and maternity, and so on, may well be imagined. The obsession remained with her through twelve years. It was partially relieved by the operation and she went back to her work but continued writing distressed letters emphasizing her unhappiness: "I guess I just wasn't made to be happy." About two years after operation, she resigned her position in order to marry a man who was well-suited to her both physically and intellectually, but again she broke down and all the old fears came back and a number of new ones; and she returned, begging for further relief. A more extensive prefrontal lobotomy was performed March, 1939, and since then, the patient has grown even fatter, is cheerful, indolent, and entirely relieved of her obsession with syphilis. She has returned to her work after a rather long convalescent period and still keeps company but has no definite plans regarding marriage.

The alteration in personality brought about by prefrontal lobotomy is sometimes quite striking. A timid, restrained hypochondrical woman now joins in the party with her daughter, is able to dance until after midnight with her daughter's friends, cook supper for them, and send them home in the midst of jests and wise cracks. She is no longer conscious of the fatigue nor is she very much aware that there is such a thing as dignity in the presence of young people. She boasts that the boys come to the house on account of her. A former school teacher, having suffered from involutional depression for six years, sits unconcernedly among a group of physicians while we are describing to them her suicidal attempts, chronic alcoholism, her erratic behavior, and hare-brained plans for an artists' colony, her alcoholic father, and her psychotic mother and sister and then smilingly states to the doctors: "I have to drink alone because I get perfectly nasty in public." For the first time in six years, however, this patient says that she is able to work without the feeling of a "crown of thorns" and a red hot spike in the back of her head. At present she is employed for $17 a week but she puts up an excellent appearance and is actually gaining weight.

This lack of consciousness of the self that results from prefrontal lobotomy may be carried too far or it may be induced in the wrong type of individual.

Case 5

One of our most unsatisfactory results occurred in a 58-year-old business man, who for 25 years had suffered periods of depression with anxiety and suicidal ideas. Following operation, he was for awhile indolent and cheerful but later his behavior became extremely disagreeable. He abused his wife, ordered his children out of the house, sent his secretary home in tears and tried 25 others without finding one who would stand for his tantrums, and eventually wound up in a number of law suits, some for physical violence, with his business ruined and his family alienated. Yet, as his son describes him, he walks briskly about the house and about his home town, munching candy and saying he never felt better in his life, advising everybody he meets to have the operation. A more thorough investigation into the previous character of this individual would have probably caused us to refuse operation no matter how great the clamor. This individual had always been aggressive; as a boy, he had kicked his brother's dog to death; when his father's estate was placed in the hands of a brother, he brought suit and did everything he could to humiliate the family; he took long drives by himself in an effort to relieve the inner tension and sometimes when the trouble became too great, he would shirk his responsibilities and go off on vacation or to a sanitarium. In this case as well as in one or two others, we believe that the suffering of the patient was occasioned by the conflict between the aggressive instincts and the need for their control, and that the operation served to release that control. Following operation, the patient could carry out the natural aggressions of his nature without thought of consequences. It has been disastrous for the family in this one case; as far as the patient himself is concerned, the operation cannot but be considered an overwhelming success.

The effect of prefrontal lobotomy upon the consciousness of the self may explain many of the peculiarities and discrepancies in conduct that have been noted by various individuals who have studied the frontal lobe syndrome. Some authors record marked distractibility, while others emphasize the lack of distractibility. The German authors were particularly impressed by the fatigability of patients with frontal injuries, while other investigators have noted an extraordinary lack of fatigability and endless capacity for work. We have observed both of these contrasts in different individuals following prefrontal lobotomy and are inclined to explain them on the fundamental basis of diminution in consciousness of the self, with recrudescence in purer form of the innate energies of the individual.

The naturally energetic person proceeds with his task, unaware of feelings of fatigue that would cause the normal individual to stop. The normally indolent individual is, on the other hand, no longer concerned about the necessity of going forward to achieve his goal and therefore relinquishes it altogether or postpones the task until he feels like working. Procrastination is a very common phenomenon even in otherwise energetic people. As one lady said, "I wake up in the morning and I think of all the things I have to do, and then I say to myself, 'Oh, I'll do that tomorrow,' and then, somehow, tomorrow never comes."

Consciousness of the self stands near the top in the hierarchy of attributes of the total personality. In the cases cited briefly and in many others it is one of those forces that underlie accomplishment and adjustment in any society. Without consciousness of the self the human race could not have risen as far as it has in the scale of living beings. On the other hand, we believe there can be too much of a good thing, and if consciousness of the self, either as an aggregation of organs or as a unit of society, becomes in any way fixed or obsessive, the more useful activities of the personality may be correspondingly diminished. In extreme cases a disabling psychosis or neurosis may result. We believe this factor in the personality is mediated by the frontal lobe since the more complete the removal of the frontal tissue, the more striking the lack of this function; whereas gross lesions produced in other parts of the brain do not seem to interfere with the function in anything like the same degree. To some extent, this function presents an intellectual facet, namely, foresight, the projection of the individual into the future and the recognition of the image of the self in the act of becoming. There is also the affective facet, the emotional charge connected with that image. The operation of prefrontal lobotomy seems to be specific in reducing the affective component of the image of the self as constructed by the frontal lobes. Only immediately following the operation in the stage of diaschisis is the lack of foresight absolute or even relatively great, whereas later on the patient is able to foretell with considerable probability what will occur in case a certain activity is carried out. Yet he is notably unconcerned about possible repercussions upon the self and especially about the possibility of failure.

In cases in which individuals are suffering from a sickness that is associated with too distressing ideas in regard to the future, a consciousness of the self that envisages contamination, guilt, persecution, incurable disease and the like, and in which the ideas have become so fixed that they menace the integrity of the personality and threaten disability or suicide, it seems justifiable to use any safe method in diminishing that affective component. Prefrontal lobotomy finds its most successful application in cases in which the consciousness of the self is obsessive and accompanied by an intense emotional feeling tone. The most satisfactory results (see Tables 1 and 2) have been obtained in cases of involutional depression, particularly with agitation, and in the various obsessive states whether decorated by compulsions, ruminations, or hypochondriases. The energy component of the personality is apt to have a rather large part in the subsequent adjustment of the patient for the reasons given above, namely: that the naturally industrious goes forth unhampered by feelings of fatigue while the naturally indolent subsides into a *dolce far niente* (Bianchi). The more aggressive patient, such as we find not infrequently in the obsessive-compulsive group, may cause some embarrassment by rather unrestrained behavior. On the other hand, if aggressive behavior is part of the psychosis and is determined and inaugurated by anxiety

TABLE I

SOCIAL ADJUSTMENT OF PATIENTS

DIAGNOSIS	NUMBER	REGULARLY EMPLOYED	STUDYING OR PARTIALLY EMPLOYED	HOUSEKEEPING	HOME	INSTITUTION	OPERATIVE DEATH	DIED SUBSEQUENTLY	RECENT CASES
Involutional Depression	29	4	1	15	4	1	1	1	2
Obsessive States	17	5	1	6	3	—	2	—	—
Schizophrenia	11	4	—	—	5	1	—	1	—
Chronic Alcoholism	2	1	—	—	—	1	—	—	—
Anxiety Neuroses	2	—	1	1	—	—	—	—	—
Hysteria	1	1	—	—	—	—	—	—	—
Undifferentiated	4	1	—	1	1	1	—	—	—
Total	66	16	3	23	13	4	3	2	2

TABLE II

Results of Prefrontal Lobotomy

DIAGNOSIS	TOTAL	GOOD	FAIR	POOR	OPERATIVE DEATH	DIED SUBSEQUENTLY	RECENT CASES
Involutional Depression	29	17	7	2	1	1	2
Obsessive States	17	12	1	2	2	–	–
Schizophrenia	11	5	4	2	–	1	–
Chronic Alcoholism	2	1	–	1	–	–	–
Anxiety Neuroses	2	1	1	–	–	–	–
Hysteria	1	1	–	–	–	–	–
Undifferentiated	4	–	1	3	–	–	–
Total	66	37	14	10	3	2	2

and fear for security for the self, prefrontal lobotomy is practically specific.

Prefrontal lobotomy is no panacea and is not to be used indiscriminately. The operation should be performed only in those cases presenting a poor prognosis, not necessarily measured in terms of chronicity, but rather in terms of rigidity of personality and possibility of restoration to useful activity in spite of some tactlessness and lofty intransigeance.

SUMMARY

Prefrontal lobotomy bleaches the affective component connected with the consciousness of the self. Patients who are afflicted with a distressing consciousness of the self (either as a unit of society or as a collection of organs) and whose preoccupation is fixed and unyielding, will secure from prefrontal lobotomy definite relief even though certain of their ideas and actions may persist for a long time. Reduction of the affective component allows the personality to appear in purer form, divested of certain restraining features, but essentially unchanged in regard to energy and intelligence, the principal change being an alteration in the direction of interests from within, outward. Prefrontal lobotomy is radical treatment, not only figuratively but literally, in that it reaches down to the roots of the personality. If the neurosis or psychosis has its roots in an overwhelming consciousness of the self, and if this consciousness is intractable and disabling, then prefrontal lobotomy may bring peace to the warring mind and a new lease on life.

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THE SIGNIFICANCE OF PSYCHOLOGICAL RESEARCH IN SCHIZOPHRENIA *

by

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THE treatment of schizophrenics with insulin and other similar chemical methods is apt to relegate to the background interest in the psychological investigations. Although the chemical treatments have yielded considerable results, there are several reasons why the psychological investigations should not be neglected. As yet very little is known as to whether the results of the somatic treatment will be permanent. Moreover, the somatic treatment does not help in all cases, and it is not possible to predict which cases will or will not be helped. Duration of the disease has often been considered a reliable indicator as to the chances of improvement. The clinical data, however, do not support this claim. There are cases of spontaneous recovery even in an illness of long standing, while in other cases the typical schizophrenic end-state develops after a short acute attack. Perhaps one day we shall find signs which will enable us to decide which cases have a bad or good prognosis. Chemical research, particularly, may become instrumental for this purpose.

In any event, psychological investigations can be of assistance. Examinations with specific tests reveal that there is a definite mental change characteristic of schizophrenic patients. But not all patients with the clinical diagnosis of schizophrenia manifest this change. Thus far we are not able to differentiate clinically between those cases which show this change and those which do not. There is some hope, however, that with the help of the demonstrable mental change, groups with different prognosis can be recognized. The findings further suggest that by means of psychological investigations, types of the disease, which do not correspond to the usual clinical classification, can be distinguished.

The psychological investigations can also aid in determining whether the recovery after treatment consists merely of a clinical, symptomatological, or social improvement, or whether it is a real rehabilitation. Such clarification would be of great importance, not only in cases which have been treated, but also in cases of so-called spontaneous recovery.

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Finally psychological studies have a special bearing on the question as to whether and in what way psychotherapy should follow somatic therapy. Explanations given later will serve to demonstrate that psychotherapy deserves special attention in this respect.

Psychological exploration of schizophrenics have been carried out in a great number of studies. Dr. Nolan Lewis' book presents a good review of them. Here I should like to mention, in particular, some earlier publications by Bleuler, Storch, and Meyer-Gross, and some experimental studies, especially recent ones, from the psychological department of Worcester State Hospital (Shakow, Rosenzweig, Huston, et al.).

Most of the earlier publications present chiefly theoretical discussions based upon an analysis of clinically outstanding symptoms such as changes in thinking, language, etc. As far as they involve experimental work, research is focussed upon single psychological capacities by studying separately reaction time, memory, attention, etc. Both procedures can become only indirectly productive for the problem in which we are interested. Due to the complexity of the material in the first procedure analysis produces very little more than somewhat speculative general ideas about the mental change in schizophrenia. In the second procedure, the testing of single capacities, no matter how minutely examined, yields more or less piece-meal material which can be evaluated only from the basic personality change. This criticism is also valid in regard to the investigation of the scatter in the Binet-Simon test. To know the change of reaction time, attention span, or retention, etc. in itself does not help us to gain an understanding of the essential personality change in the patient.

The New Psycopathological Approach

The type of approach which I wish to emphasize differs from most of these studies. It places the changes of the *total personality* in the foreground and attempts to handle them *experimentally*. This approach goes back to research on patients with irreversible organic brain lesions by my late co-worker, A. Gelb, and myself. It is also true that in the field of organic lesions, separate symptoms have usually been singled out for study. In contrast to this procedure, we tried to study the behavior of the patient in its entirety and to determine the changes of the total personality. From these investigations, we arrived at a distinction between two kinds of human behavior, which are based on two kinds of attitudes, *the abstract* and *the concrete*.

These attitudes are neither acquired mental sets, nor habits of an individual, nor do they represent specific isolable aptitudes such as memory or attention. They are rather capacity levels of the total personality, each furnishing the basis for all performances on a certain plane of reference in response to the outerworld.

The concrete attitude is realistic. In this attitude, we are given over and bound to the immediate experience of the given thing or situation in its uniqueness. Our thinking and acting are directed by the immediate claims made by one particular aspect of the object or situation in the environment.

In the abstract attitude, we transgress the immediately given specific aspect or sense impression, we "abstract" from particular properties. We are oriented in our action by a more conceptual point of view, be it a category, a class, or a general meaning under which the particular object before us falls. We detach ourselves from the given impression; the individual thing represents to us an accidental example or representative of a category. Therefore, we also call this attitude the categorical or conceptual attitude. The abstract attitude is basic for the following potentialities.

1. To assume a mental set voluntarily.
2. To shift voluntarily from one aspect of the situation to another.
3. To keep in mind, simultaneously, various aspects.
4. To grasp the essential of a given whole; to break up a given whole into parts, and to isolate them voluntarily.
5. To abstract common properties; to plan ahead ideationally; to assume an attitude toward the "mere possible," and to think or perform symbolically.
6. To detach our ego from the outerworld.

The abstract behavior is the more active one, whereas the concrete is the more passive one. For the concrete behavior, the above mentioned potentialities are not prerequisite.

We have to differentiate various degrees of both, the abstract and the concrete behavior. First, there are various degrees of abstract behavior corresponding to the degree of complexity which the performance in question involves. For instance, the highest degree of abstract behavior is required for the conscious and volitional act of directing any performances whatsoever and for the act of accounting for them to oneself or to others. A less abstract degree is required for conceptual behavior when unaccompanied by the awareness of one's doing. Specific instances of this type of behavior are symbolic or metaphoric thinking and intelligent behavior in everyday life.

The gradation also applies to concrete behavior. The most concrete way of dealing with situations or things is to react to one property of them exclusively; for instance, reacting alone to one color or a particular form of the object, or to its practical use. A less concrete approach is indicated when the person is embracing in his scope the total concrete configuration of an object or situation and is not influenced solely in his response by one impressive particular of it.

The healthy individual combines both attitudes and is able to shift voluntarily from one to the other, according to the demands of the situation. Some tasks can be performed only by virtue of the abstract attitude, while for other tasks the concrete attitude is sufficient.

Certain brain diseases disintegrate human behavior so that the capacity for abstract behavior is impaired to a greater or less degree. Thus the patient becomes more or less reduced to a concrete level of behavior. He can perform only tasks which can be fulfilled in a concrete manner (Goldstein and Gelb).

In order to avoid misunderstanding, we have to emphasize that the process of disintegration in the direction of concrete behavior does not prevent the arousal of ideas and thoughts. What the deterioration actually affects and modifies is the way of manipulating and operating them. Thoughts do, indeed, arise but can only become effective in a concrete way: just as the patient cannot deal with outerworld objects in a conceptual frame of reference, so he deals with ideas simply as things which belong to an object or situation. Concepts, meanings, categories, other than situational mean-end relations are not within his scope.

Hence the characteristic change in patients with brain lesions can be considered as an impairment of the attitude toward the abstract; the various symptoms as manifestations of the basic defect in various fields. From this basic personality change, many otherwise separately described disturbances of reaction time, memory, attention, etc., become understandable in a unitary way.

We arrived at our results especially through the use of various sorting tests. (Zuordnungstests.) Our general concept and methodological procedure were adopted by the late Russian psychiatrist, Vigotsky, in his attempt to determine the basic intellectual change in schizophrenia. He, too, used for his studies a sorting test, a modification of a test devised by the psychologist N. Ach. This test, named the Vigotsky test, became known in this country through the publications of Hanfmann and Kasanin. Vigotsky believed the change that he found in schizophrenia to be similar to the impairment of the attitude toward the abstract which we found in organic cases. Being inclined to consider the change an impairment of the thought process proper, he spoke of an impairment of "thinking in concepts." Kasanin and Hanfmann have confirmed Vigotsky's findings on a greater number of patients. Because, in my opinion, this personality change does not concern thinking alone, I prefer to speak of a change in the total behavior and to consider the impairment in thinking a special expression of it.

I see with satisfaction that Hanfmann, in one of her latest publications, on the basis of a very careful examination of a case of schizophrenia, agrees with me that "the reduction of loss of the categorical attitude (which her patient showed) is to be considered not as a change within the intellectual sphere alone but as a basic disturbance in the functioning of the total organism. The intellectual and emotional disturbances are probably only two manifestations of the one basic change." Cameron (1939) confirming the findings of Hanfmann and Kasanin comes to the conclusion that "the schizophrenic's tendency to maintain the concrete attitude" is strong.

Notwithstanding the usefulness of the Vigotsky tests for investigation of schizophrenics, I favor those tests which we introduced for examining irreversible organic cases and those which my co-workers and myself have subsequently developed and improved. These tests seem to me much simpler than the Vigotsky test and therefore more easily given to patients. They are partially described in earlier papers of Gelb's and mine, and our students' in Germany. In this country, the tests were used in studies of my co-workers, Bolles, and Nadel, and of mine. A detailed description of all these tests has just been published by Scheerer and myself.

The battery of tests contains the following: the so-called stick test, the color-sorting test, the color-form test, the object-sorting test, my block test and others. Usually the Vigotsky test and the Rorscharch test are also administered.

All these tests are of the same character in principle. They all represent similar procedures to discover personality changes. However, it would be unwise to confine our exploration to the application of one test. We use a battery of these tests on the same patient, because at times one test may be more effective in revealing the change, and at other times another test may serve the purpose better. The reason for these different results will be disclosed when we take into consideration all the implications of the individual tests and the structure of the personality change. Particularly with respect to the possibility of quantitative scoring, there is a great difference between the various tests. My block test lends itself especially well to quantitative studies. Therefore, I would like to deal somewhat more in detail with this test.

In the test, the Kohs block designs, which the patient has to reproduce with four blocks, were used. I modified the procedure as follows: first we present the original design. If the patient does not succeed, we present him consecutively with the following modifications: first, an enlarged design of size equal to the four blocks; second, the original design divided by lines which breaks up the figure into four parts corresponding to the four blocks required; third, the enlarged design also divided by lines; and finally, a model built by the four blocks proper. *This modification originated from our experience that in impairment of abstract behavior the subject's difficulty is mainly due to the inability to abstract (1) from size and (2) from the given configuration, the pattern of the design.* This concrete dependence upon size may be overcome by introducing the *enlarged* designs. The concrete dependence upon the given *design-pattern* may be overcome by presenting the designs *broken up into squares* corresponding to the individual blocks. This division can be carried out by inserted lines, or by presenting the blocks proper. Although the patient may still be unable to copy the original design, he may be able to copy the enlarged design or the design with lines or only the block model. The existence of the impairment is confirmed by the fact that the patient cannot copy the originally presented design even after he has succeeded with any one of these modifications. This shows that he is incapable of learning the abstract attitude. The modifications presented here may be evaluated as representations of different levels or degrees of concreteness in order to facilitate the patient's performance. The enlarged design with lines is still less concrete than the final presentation of the model built by the blocks themselves. There is still one step beyond this, namely, to present the four blocks separately instead of together, so that the pattern in itself is not presented and the reproduction is reduced to placing four single blocks side by side according to the four models. (For details see the monograph of Scheerer's and mine.)

What can we learn from this investigation of schizophrenia?

The most significant result of the findings with these tests is that in *a certain group of schizophrenics there is a characteristic impairment of the attitude toward the abstract:* the patients behave *much more concretely* than do normals and do not learn to understand, even after demonstration, what the abstract attitude means. In principle, our results are in agreement with the findings of Vigotsky, Kasanin and Hanfmann and Cameron.

Some average individuals also show a preference for a concrete procedure, while others prefer an abstract procedure. This may be characteristic of underlying personality traits. Regardless of such preferences in normals, there is one decisive difference between the normal and the patient. While the normal can be induced to proceed in the abstract way, the patient can never learn it.

These results concerning the change in schizophrenia give rise to various questions:

1. *Is it possible to understand, from these findings, the symptoms which are usually considered characteristic of schizophrenia?*

2. *How is the similarity of the disturbance in schizophrenic patients and in organic patients to be interpreted?*

3. *Does this impairment of the attitude toward the abstract, represent a basic change in schizophrenia, or a secondary phenomenon?*

4. *What consequence have our results for psychotherapy in schizophrenia?*

1. THE SYMPTOMATOLOGY IN SCHIZOPHRENIA VIEWED FROM THE NEW APPROACH

a. The Concreteness of the Schizophrenic

Many of the peculiarities of the behavior of schizophrenics become understandable, when considered as expressions of a greater concreteness. Concrete behavior means that in our behavior and activity we are governed, to an abnormal extent, by the present outerworld stimuli and by the images, ideas, and thoughts which act upon us at the moment. On the one hand, symptoms arising from this attitude are autistic thinking and acting, and on the other hand, abnormal boundness to outerworld stimuli as far as they belong to that realm of reality which the patient experiences. The world of the schizophrenic is determined to a pathological extent by his own feelings and thinking, and by his capacity to react. The demarcation between the outerworld and his ego is more or less suspended or modified in comparison with the normal. Here is one origin of illusions. The objects which impress the patient are not the same as those which would impress the normal person in the given situation. He experiences only objects to which he can react in the only way in which he is capable, i.e., in the concrete way.

He does not consider the objects as parts of an ordered outer world separated from himself, as the "normal" does.

Hanfmann's description of a case of schizophrenia (1938) contains a great number of examples which show that the patient is bound to reality, as he experiences it, in a pathologically concrete way. Like our patients with irreversible organic lesions, Hanfmann's patient was unable "to make an unreal assumption or to accept a fictitious situation as such, whether it was expressed in a sentence, a story, or a picture." Because of being limited to this concrete behavior, the patient reacted in the "ball and field test" with the declaration that she had not lost a ball; and in the object-sorting test placed the fish with the vegetables because "fish goes with pumpkin." Also the reactions of Hanfmann's patients in the Healy completion test (1939) show the pathological boundness to "reality." The schizophrenic always picks out blocks with pictures which show a concrete relation to that part of the picture which he experiences at the moment. Another expression of this attitude is that the patient usually considers the people in the picture in the process of performing a definite action. They appear moving or pointing to something which is often contrary to the actual situation in which the people are presented in the picture. The reality which belongs to the concrete attitude is more dynamic than static. The patients have the greatest tendency to do something. (If an individual is abnormally attracted by the activity of another individual, of course, he will not be aware of the fact that his behavior does not correspond to the "real" situation.) In the same way, the schizophrenic prefers situations of activity. Objects are experienced as things for definite use. On this occasion as well as on others, personal attitudes very often come to the fore in the same way as in the reactions of the organic patients. The patient puts a horse in the room because "there is a boy and the boy wants a horse. He wants to travel." He completes pictures according to similarity or equality in the same way as organic patients with impairment of the abstract do in the sorting test, i.e., according to a concrete relation, and especially according to use. He says, "I see three boys and so I put one more with them. It should be all boys, boys, boys." The patient's relation to time also definitely shows the concrete character. A schizophrenic patient of Hanfmann's said, "8:30 is the time to get up" or "the time when the sun goes down." These answers are exactly the same type as those of organic patients. If one of my patients is asked what time it is, he says, "It must be after 4 o'clock because 4 o'clock is tea time." And another patient says, "It is 12 o'clock because at that time my friend leaves the room, and he is leaving now."

This concreteness also finds its expression in the *language* of schizophrenics. Analysis reveals that many of the very strange words which the patients use, become understandable when considered in relation to the concrete situation which the patient experiences at the moment and which he wants to express in words. In their language, there is an absence of generic words which signify categories or classes. Or when they do use such words, analysis shows that for the patient they do not correspond to generalizations. We found the same true of amnesic aphasic patients (1936).

The concreteness in the language of schizophrenics is especially evident in the investigations with our tests. For instance, in the color sorting test, one of our patients picked out various shades of green, but in doing so, he named them—peacock green, emerald green, taupe green, bright green, equet green, bell green, baby green. He refused to say that all may be called green. Another patient said in the same situation: "This is the color of the grass in Virginia, this is the color of the grass in Kentucky, this is the color of the bark of the tree, this is the color of the leaves." The words these patients use in naming colors belong to a definite situation in which the individual color is experienced by the patient. The color names do not, as in normals, represent the category to which the individual color belongs, but merely represent an individual property of an object. The words have become "individual" words, i.e., words which fit only a specific object or situation. This individual character of the word is characteristic of the language of schizophrenics, in general. According to the specific way in which the patient experiences a certain object or situation—a definite property or aspect of the object or situation becomes the basis for the choice of words. This explains why a patient (described by Tuczek) called: a bird—"le song"—the song; the summer—"le warm"—the warm; the cellar—"le spider"—the spider; the physician—"le dance"—the dance (because "during rounds the physicians skip around the professor"); or, another example, one of my patients said instead of mouth—kiss. These peculiarities of language have erroneously been considered as expressions of symbolic or metaphoric thinking. I agree with Storch who correctly stressed that symbolic thinking belongs to higher forms of thinking which are usually impaired in schizophrenia, and that the observable phenomena are understandable from the point of view that we are dealing with a very concrete form of thinking. Symbolic thinking might incorrectly be suggested because the "physiognomic" aspect often plays a great role in the schizophrenic's attitude toward the world. The average individual, too, is able, and at times inclined, to experience and to see things in such a way that the concrete, dynamic, and expressive qualities overshadow their objective properties. We then speak of "screaming colors," of a "soft or harsh sound," of an "inviting atmosphere," of a "cold look," etc. When we use the term physiognomic in this connection, we borrow the name from the sphere of facial expressions, and we apply it to all kinds of immediate sensory experiences. The reactions of the schizophrenic are determined by this physiognomic concreteness to a high degree. For example, a patient calls the physicians "the dance" because during rounds the interns skip around the professor. At first this expression sounds strange but becomes understandable from the point of view of concrete physiognomic realism. One other example is very illuminating in this connection. A schizophrenic patient of Storch's suffering from persecutory delusions casts anxious glances at the moving door and exclaims, "DA FRESSEN MICH DIE TUEREN." (There the doors are going to eat me up.) Obviously, the opening and the closing of doors were concretely experienced as the physiognomy of the opening of the mouth of an animal, and therefore, had a threatening character. Many examples of the schizophrenic's awkwardness can become comprehensible when related to this concrete physiognomic sphere. There is no question that the physiognomic character of an object changes greatly with the varying attitudes of the person toward the world and that it also depends largely upon the ideas which govern the individual at the given moment. This fact may account for the impressive variety in the schizophrenic's physiognomic experiences and the peculiar words he uses.

The word, when used by schizophrenics, appears as part of an object or a situation, not as a representative of it, in the same way as it is used by some patients with irreversible organic disease. N. Cameron (1939) recently pointed out this concreteness of the schizophrenic's language.

We can grasp the meaning of an individual word, only if we know the concrete situation to which it belongs for the person who is speaking. It may be difficult to find out in schizophrenics the respective concrete situation, to which a word belongs. Should we succeed in this attempt, much of the awkwardness in the schizophrenic's language will disappear. His language will become understandable, particularly when we bear in mind that many of the experiences of the schizophrenics differ so widely from those of the "normal," that the healthy channels of verbal expression are neither sufficient nor suitable for verbalizing these experiences. This is all the more true because language, in general in our civilization is stereotyped and *not* rich in words with regard to the specificity of concrete situations. Thus the patient is forced to build up a language, which may appear very strange to the healthy, but is adequate to his experiences. This fact makes communication between the patient and the physician, as far as it is based on language, very difficult.

The application of the tests, referred to here, increases our understanding of the thinking and speaking of schizophrenics, because it will help us to discover the special concrete situations in which the patient is living. It is often difficult or impossible to find out in direct conversation or in investigation of isolated capacities anything about the ideas, the hallucinations, the feelings, etc., which govern the patient's behavior. But these factors come into the foreground during the execution of the performance tests—adventitiously, so to say incidentally—without conscious intent on the part of the patient. It is a characteristic of the impairment of the abstract attitude that the subject is not able to account to himself for what he is doing. Thus it is only natural that he is not capable of communicating his inner experiences. However, these inner experiences may manifest themselves in and during his concrete actions, because they belong to this situation and arise without deliberate effort, of which latter the patient is deprived by pathology.

The greater concreteness is the one conformity in the behavior of patients with schizophrenia and those with cortical lesions which the new approach disclosed. I would like to point out another similarity. As I have explained on other occasions (1939), the modifications of performance of organic cases become understandable, if we consider them, not only as sequelae of a distortion of certain capacities, but also as changes corresponding to the functioning of *parts* of the *nervous system* which have become *isolated* from the *whole,* through anatomical defect. The function of isolated parts is changed in a definite way, according to definite rules. From these rules which govern the change in functioning, many symptoms of the organic patients become understandable in a unitary way. These modifications represent the positive symptoms, which many years ago H. Jackson segregated from the negative symptoms, i.e., symptoms directly produced by the destruction of the structure.

Careful observation of patients with irreversible organic lesions has disclosed some forms of change characteristic of the condition of isolation. The thresholds of excitability are changed, the patients are forced to respond more or less compulsively to each stimulation; there is an abnormal instability and rigidity of the reaction; there are especially signs of disorganization of the normal *figure-ground relation,* etc. One sequel of isolation is the above mentioned pathological concreteness, the concomitant phenomenon of the impairment of abstract behavior. Phenomena described in schizophrenics as weakness of the capacity for concentration, "Gedankenabreissen," rigidity and distractibility, forced responsiveness to singularities, contamination, etc.; all these in addition to other phenomena are observed in the same manner in irreversible organic patients and can be understood in the same way as phenomena of isolation. It would lead us too far from the subject, to elaborate on the form of isolation peculiar to the nature of schizophrenic pathology. I would like to mention only some examples which may illustrate this. When a schizophrenic says, "everything I think of always gets away from me," or "everything in me is changing continually," or when a patient of Storch's complained, "my thoughts are so confused, everything is wavering, nothing is fixed—one cannot hold fast to anything," we are faced with the phenomenon of instability. If a patient in addition to complaining about the changing of all experiences, also reveals a *great fixation* to some events, we meet with a phenomenon very well known in organic cases. I have tried to explain that distractibility and abnormal fixation are expressions of the *same* functional change under different conditions. If another patient says, "one does not know what is coming, one is completely powerless," we are facing the same *pathological boundness to stimuli* which is a characteristic symptom of organic cases (1939). Loss of constancy and definiteness in the conception of the structure of objects, is equally characteristic for schizophrenic patients, as for organic. In organic patients, it is produced by an impairment of the "normal" figure-ground formation.

The healthy organization of the outerworld experience is based upon our ability to differentiate between those aspects which are essential in a given situation and those which are not. The first aspects are in the foreground of perception, thinking, action, as "figures." What is not essential at the moment is in the "background." This organization is based upon two activities. On the one hand, we abstract from the many aspects which may arise at the moment, and on the other hand, we have to supplement relations which are not phenomenally present. Both demand the abstract attitude. Any impairment of the abstract capacity disturbs the normal discrimination between the essential and the unessential in the given situation, between figure and ground. When, for instance, the glass of a window appears as the essential part of our experience rather than the wall or the frame, or in other words, when the glass is the figure and the wall or frame is the ground, it is because the "significance" of the window at the moment is represented by the transparent glass. Yet what we really experience is much more than that. Although we perceive the frame, the color, the dirt spots on the glass, and we even encounter some obstacles for our vision in that the glass may obscure the distinctness of the outerworld, we need not pay attention to all these unessential phenomena. We immediately place the glass, or the objects which we perceive through the glass in the foreground. This is determined by the significance of the transparency of the glass for the total situation at the moment. This normal way of experiencing really presupposes a definite attitude of the individual towards the world. If we should pay attention to all the various phenomena, without such differential emphasis, then the character of the window would disappear, the glass would no longer be the figure, and the sharp boundaries on which our ordered world is based would lose their precision, and our world would be in confusion.

This does occur in organic disease and in schizophrenia. N. Cameron observed that a "most striking characteristic" of the schizophrenic patients was "their inability to maintain adequate boundaries." Due to this deficient figure-ground formation, objects or situations, which can be grasped as concrete objects, come abnormally into the foreground, and correspondingly, the patient gives an answer which appears to the normal as a defect in recognition. Many illusions and delusions of schizophrenics originate in this way. We must appreciate the vagueness of the boundaries between figure and ground in such patients—the inversion, i.e., coming into the foreground of the ground instead of the figure—the sudden and nearly permanent fluctuation between figure and ground—in order to understand many symptoms. One of the most outstanding symptoms is the indefiniteness or disappearance of the normal boundaries between the *ego* and the outerworld, which finds its expression in many utterances and actions of the patients. It is more difficult to disclose the origin of these symptoms in schizophrenics than it is in organic patients. The "normal" world to the schizophrenic is not simply reduced as it is in organic patients, but it is changed corresponding to his ideas; phenomena enter his perception and determine his recognition about which we know nothing. Thus it is difficult to understand his behavior.

As an example of the change of the *"normal" relation between figure and ground* I like to quote the following utterance of a patient of Fischer's. "The air is still here, the air between the things in the room, but the things themselves are not there any more." This defective organization of figure and ground can bring inappropriate objects or aspect of them into the foreground and so deprive the patient's world of its normal constancy. From this point of view, we can understand why the patient gives entirely inadequate answers or why he says, "Everything I think always gets away from me, my thoughts are so confused, one cannot hold fast anything." Because things come into the foreground unexpectedly and passively the patient explains, "One does not know what is coming, one is completely powerless." You will readily imagine how confusing it may be for an individual to be exposed to such experiences.

I have to confine myself to these few illustrations. I think from the point of view here advanced, many strange symptoms in schizophrenics become intelligible. We can understand them as reactions which are commensurate to the changed world of the schizophrenic, to a world which is pathologically concrete and void of abstract interpretation. This point of view takes into consideration the "formal" change in the process of schizophrenia. Though I emphasize this point, I do not overlook the problem of why on the basis of this defect sometimes one and sometimes another idea comes into the foreground. That is, however, a problem with which we cannot deal here.

2. THE CHANGES IN PATIENTS WITH IRREVERSIBLE ORGANIC DEFECTS AND IN SCHIZOPHRENICS

In stressing the similarities of the behavior modifications in schizophrenics and "organic" cases, I do not like to be misunderstood as considering schizophrenia to be simply an organic disease. From my general position, regarding the body-mind relationship, I am inclined to assume that equivalent functional changes can be produced by organic, i.e., structural or chemical as well as by psychological derangement. We cannot discuss this problem here. It is only important to point out that we can consider the modifications of performance in schizophrenic and organic cases as being equivalent with respect to the change in function. To draw conclusions regarding possible identity of the underlying processes would be, however, premature. The fact that in both cases, in addition to the similarities, there are essential differences, should make us cautious.

I would like to mention here a few characteristics which might be suitable for demonstrating in principle, these differences. Let me exemplify them by pointing to the differences in impairment of the abstract attitude and the abnormal concreteness in both kinds of pathology.

The level and kind of concreteness in schizophrenia is not identical with that in somatic cases. The somatic case exhibits a disintegration toward the concrete which is of *a simplified and inane form*. He cannot deal with outerworld objects in a conceptual frame of reference; he deals with them simply as *things* with which one can do something in a situation. Categories, other than *situational means-end* qualities are not *within his scope*. Of course, he too has thoughts and ideas, but their utilization is reduced to a level of non-conceptual thinking. However, this deterioration is a reduction of healthy organization to the simplest form of its realization, to the level of mere stimulus-response, and apart from this, an impairment of learned performances. Thus the concreteness in somatic cases is obvious and accessible to the observer because the means-end relation is one in which the observer himself can enter during concrete situational demands, and because his knowledge of healthy organization, in general, and of the patient's premorbid personality, in particular, opens the way for appreciation of the change of behavior. The situation in regard to the schizophrenic is *quite another one,* because of his different type of concreteness. This is well evidenced, for example, in the performance with my Block Test, of *both* types of patients. In the somatic cases the outstanding deficiency in reproducing the model with the blocks consists in the difficulty of breaking down the configuration and in the determination of the procedure by the simple perception of the given configuration. The type of errors is quite consistent with and understandable from a simple point of view.

The schizophrenic's performance suffers from similar deficiencies, but in addition to his perceptual concreteness, the schizophrenic develops his own pattern in grouping the blocks because his personal ideas enter and influence the performance. This introduces an entirely different aspect, since the grouping of the blocks represents a projection of his personalized thinking and associations aroused by the presented models. Since the latter vary continually, the types of errors are much less consistent and more individual. This is related to the fact that the world of the schizophrenic is much richer and more animated with personalized ideas than that of the somatic patient. That the personality change in schizophrenics expresses itself on a different level of concreteness can be seen from another important symptom; i.e., from the aforementioned prevalence of the so-called physiognomic aspect of percepts.

It should be clear from these examples that we are dealing with intrinsic differences in the concreteness of the schizophrenic and the somatic cases. The problem, of course, demands further scrutiny but it seems to me that the outlined characteristics tend to show that a closer investigation and comparison of these two features can offer deeper insight into the nature of schizophrenia.

3. PRIMARY AND SECONDARY CHANGES IN SCHIZOPHRENIA

Concerning the problem whether the impairment of abstract attitude is the primary change in schizophrenia or a secondary phenomenon, I would suggest the following answer.

There was much discussion about primary and secondary symptoms in schizophrenia. I would like to mention, particularly, the reports of Bleuler and Meyer-Gross, concerning this subject at the Psychiatric Meeting in Basel, 1929. One has spoken of a fundamental, primary change and of secondary phenomena which are to be considered as psychological reactions to the primary personality change, i.e., as expressions of the struggle on the part of the pathologically modified psyche with the demands of the environment. The primary change was considered either as a somatic nucleus, a consequence of which bodily and mental symptoms appear (so for example, the catatonic phenomena or the disturbances of associations); or the primary change was conceived as being a mental one, e.g., an insufficiency of mental activity, intrapsychic ataxia or split personality and so on.

There is no doubt that the clinical picture of schizophrenia contains symptoms which may suggest an origin in a disturbed function of some apparatus of the brain, particularly of the frontal lobes and the subcortical ganglia, and also symptoms which are better interpreted as psychological reactions. Because of the similarity of the defect in abstraction, which has been mentioned, with the defect found in somatic patients, one could be inclined to assume there is a primary somatic change in schizophrenics. However, the greater concreteness of schizophrenics also could be considered as a way out from the organism's unbearable conflict, as a protection against the danger of severe catastrophe (1939). Many a symptom found in "organic" as well as in psychogenic diseases is intelligible from this point of view. As yet it is not possible to arrive at a definite decision, i.e., whether we are dealing in this impairment with a primary or a secondary phenomenon. The similarity between the findings in organic and schizophrenic patients points to the probability that also a somatic factor is involved in the latter.

4. Consequences of Our Results upon Psychotherapy

Whether one considers these two types of symptoms as primary or secondary changes, in any case, a twofold therapeutic procedure is imperative. We have to attack the disease underlying schizophrenic symptoms with both physical and psychological means. Which way we should proceed is not simply decided from theoretical considerations. As far as somatic therapy is concerned, it certainly can be applied to any state of the patient, independent of the patient's mental state. This does not hold true for psychotherapy. There is no sense in trying psychotherapy if the patient's mental and somatic condition renders it impossible for the physician to come into a psychological contact with the patient. This lack of contact is not necessarily caused by a mental seclusion of the patient from outerworld influences in general. It can even be caused by the impairment of the patient's abstract attitude. In this latter case, the patient might not be without some contact with the outerworld but he might be incapable of that specific contact which the usual method of psychotherapy requires. This procedure can be successful only if the patient is able to grasp the explanations of the psychotherapist. But there arises a great difficulty. The therapist's explanations are on a rational plane, which exceeds the patient's capacity. This happens particularly because the impairment expresses itself in a special change of language. One can imagine how difficult any communication must be with an individual whose words are so entirely concrete or so changed in meaning that they imply something totally different for both the patient and the physician. From these considerations it becomes evident that the usual psychotherapeutic procedure is doomed to failure as long as this impairment of the abstract attitude persists.

Dr. Reichmann's paper, presented at the meeting of the American Psychiatric Association, Chicago, 1939, supports my view. Her procedure aims at a more direct, concrete communication with the patient based on empathy and cooperation with him, a communication which takes into consideration all the pathology the patient might disclose. The physician tries to adapt herself to the patient's capacities. Reichmann's success is a clear confirmation of the appropriateness of such an approach. In this connection, the work of the Swiss psychiatrist, Klaesi, is worthy of mention.

From what we have said, the impairment of the abstract attitude must first be lifted, even if temporarily, in order for psychotherapy to be of any value. (If Reichmann's approach is not used.) To accomplish that, a method such as shock therapy may be applied. Then the psychotherapist can establish rapport with the patient. Psychotherapy is especially indicated if the examination with our tests show that the treatment has eliminated the defect in abstraction at least to some extent. It must be remembered that the somatic therapy alone is not sufficient. The conflicts in themselves have not been removed by the somatic treatment and the patient will easily fall back into his protective state of deterioration. This might be one of the causes for the great number of relapses after somatic treatment without the assistance of psychotherapy. Precisely in this period of recovery, the psychotherapy can offer the patient a hold and help him to get rid of his personality problem and difficulties which he could not do without help from somebody else.

Investigation with the tests mentioned can also be useful for psychotherapy by providing a reasonable basis for the decision of what specific psychotherapy should be applied. It is self-evident that psychotherapy must be based on a knowledge of the particular mental change in the individual case. In this respect, the application of these tests offers advantages because the special way in which the patient behaves during the tests and the comments he makes, may disclose many peculiarities of his personality, of his ideas, of his emotional conflicts, which otherwise might not be disclosed.

From this analysis, we see that psychological investigations, especially with those tests, appear, at least, to be a useful, and even necessary, method of handling the problem of schizophrenia. This is also true in the cases where somatic treatment has been successful.

At present, this research has not been developed to the degree which meets all the necessary standards. However, the results are promising enough so that a continuation of investigation seems indispensable. The work which has to be done is so extensive that only by a joint effort of workers in many fields, may we expect to achieve real success. It is the special purpose of this paper to point out the necessity for that kind of research on a large scale. The tests are now available in published form so that these investigations can be carried on in different clinics on a common basis. Only through a widespread project will it be possible to study a sufficient number of patients, which is a prerequisite for reaching valid decisions on any of the questions discussed here.

The present seems particularly opportune for the execution of such a project. Research in schizophrenia, in general, has received a new impetus from the recent success of the somatic treatment. Especially chemical investigations and studies of other somatic processes are under way on a larger scale than ever before. One should not let the occasion go by for *comparative investigations of the same patients with methods of physical and psychological examination.* Only such a parallel study promises to open the way to attain a real knowledge of the essentials of this disease and to improve our therapeutic measures. This is without any question our paramount concern.

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ANALYSIS OF THE THINKING DISORDER IN A CASE OF SCHIZOPHRENIA *

by

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IN ATTEMPTING to characterize successive stages in the development of thinking, one has often made the distinction between concrete, situational thinking and abstract, conceptual or categorial thinking. In the first the person's thinking and acting are directly determined by the immediate situation in its concreteness and singularity; in the second the person tries to master the situation by applying to it certain categories or concepts. These two ways of perceiving the world, which have repeatedly been described as the two major stages in the development both of the individual person and of society or culture, have been used also for characterization of certain pathologic conditions. Gelb and Goldstein have convincingly demonstrated that in patients with cerebral lesions there is a striking loss of the conceptual approach to the world, or of the "categorial attitude," as they termed it. They showed how this loss accounts both for changes in the patient's general behavior and for defects in specific performance.

The results of recent investigations suggest that disturbances of thinking observed in schizophrenic persons may also be explained in terms of a greater primitiveness and concreteness of thinking. Similarities between the thinking of schizophrenic patients and that of primitive peoples have been repeatedly pointed out, as well as analogies between the thinking of schizophrenic persons and that of patients with defects of organic origin. Vigotsky, the Russian psychologist, was the first investigator who on the basis of systematic experimental investigation of the thinking processes of different groups of patients reached the conclusion that schizophrenic patients show a reduction of conceptual thinking comparable in kind with that observed in patients with cerebral lesions. These results were confirmed by other investigators. In applying the concept formation test introduced by Vigotsky, Kasanin and I found definite impairment of conceptual thinking in a large number of schizophrenic patients. Bolles and Goldstein and Cameron, working with different methods, arrived at similar conclusions.

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The question which arises next is that of the exact nature of this defect and its role in the total schizophrenic picture. This question can be answered only through a detailed analysis of single, clearcut cases, an analysis based on both experiments and clinical observation. In the present study I attempt to give such an analysis of a representative case of schizophrenia in which the disturbance of thinking was a prominent trait.

REPORT OF A CASE

Clinical History.—J. C., an American woman aged 23, after graduating from grammar school, where she was considered a good student, became a mill worker. At the age of 21 the first psychotic symptoms appeared, and a year later she was committed to a state hospital. This investigation was made two years after the onset of the psychosis. The patient at that time presented a typical schizophrenic picture, was withdrawn and preoccupied when left alone, had auditory hallucinations and in response to them became at times excited and destructive. Usually, however, she followed the hospital routine willingly and rather automatically. The psychiatric summary described her as well oriented, having clear consciousness and well preserved memory. In her preoccupation she was concerned with her sexual role and with her relations to the man whose voice she heard in her hallucinations. She showed strongly ambivalent feelings toward both parents, especially toward the father, and at times seemed to doubt that he was her father. There were also feelings of guilt because of sexual impulses and strong feelings of inferiority. All this emotional content, however, was seldom revealed and colored only slightly the patient's behavior in the experimental situation.

She was eager to "study," as she called it, and often came to the examiner's room of her own accord, asking to be given something to do, so that it was easy to present the tests to her. She was chosen for an intensive study because of this willingness and superficial accessibility and also because she had displayed an extremely poor performance in the concept formation test.

Special Tests.—A number of tests designed to reveal the different aspects of the thinking disturbance were given. I shall first discuss the results of some of these tests and on this basis attempt a general characterization of the disturbance. I shall then try to explain the effects of this disorder, as revealed by the test, on the particular clinical picture presented by the patient.

Interesting observations were made during the simple tests of reading and writing ability and of memory for sentences. Reading and writing in themselves presented no difficulty. More than that, they were accurate and consistent with the patient's good grades at school. What was conspicuous, however, was the attitude of the patient toward the content of the verbal material presented to her. When a sentence was read to her she almost invariably made comments about its truth or falsity. In the sentence repetition task, for instance, the patient, after repeating a sentence, such as: "When the train passes you will hear the whistle blow," would add, as if offering a proof for that statement:

"Yes, I do hear the whistle blow at night; do you?" When the examiner introduced a "false" sentence: "In summer it snows," the patient repeated it but immediately protested, saying: "No, it does not, because it is June—the flowers are out." Similarly, when during the dictation test she was asked to write the sentence "It is raining," she started to do so but stopped, looked out of the window, remarked that the weather was fine and, instead of the sentence dictated, wrote: "The sun is shining." One is reminded of the behavior of certain aphasic persons who actually cannot repeat or write an incorrect statement. The same tendency appeared in the reading test. While listening to a story read to her the patient often made remarks such as: "Yes, I know it; I see that sometimes," as if attributing a certain degree of reality to the story. When she was asked questions about the content of the story she had just read, she frequently answered them without any reference to the test but in accordance with her own experience or opinion on the subject. Thus, she read a story about a circus parade which mentioned the difference in preferences of boys and girls for animals. In answer to the question about the girls' preferences, the patient pointed to the picture of one of the animals, but continued: "The girls like to go out, to play, to study. I will put the girls like to walk, to call up, like to be dressmakers." In spite of all explanations that the questions referred to the text, she persisted in this method of answering them independently of the story and in accordance with reality as she saw it. If the story, however simple, dealt with topics outside the sphere of her personal interest or experience, as was the case, e.g., with fables dealing with wild animals, the patient could only with difficulty be made to listen to it or to repeat it. Sometimes, yielding to the examiner's coaxing, she remarked with an air of indifference: "This is just so we get some work done!" The story that could not be related to the patient's conception of reality was merely an object of artificial activity, such as reading, and had no meaning apart from that. One is again reminded of patients with injuries to the brain who are not able even to listen to a story. Such a patient, on hearing the first words, looks around the room for the persons or objects mentioned and, not finding them, is unable to comprehend the story. Although my patient showed much more normal behavior in listening to a story, tendencies in the same direction clearly manifested themselves.

Phenomena analogous to those described in the preceding paragraph were observed also when the patient was asked to describe and interpret pictures. She often spoke of them as if they had a reality value. As with the stories, questions referring to the pictures were often answered on the basis of the actual, and not the pictured, situation. Once the examiner showed her a picture representing a boy fishing next to a "no fishing" sign and asked: "Why should he not fish here?" The patient answered, with gestures indicating that she spoke of her actual surroundings: "They don't fish here in the hospital—and it is not the time to fish now."

These examples show that the patient was unable to make an unreal assumption or to accept a fictitious situation as such, whether it was expressed in a sentence, a story or a picture. Each sentence for her was essentially a communication. It must have a reality value if it was to have any meaning at all. To assume something just for the sake of argument or for any other indirect purpose was totally against the nature of the patient's ideational life. This was clearly and repeatedly demonstrated. In the "ball and field" test of the Stanford-Binet scale the subject is asked to show by drawing how he would hunt for a ball lost in a circular field. The patient merely declared that she had not lost a ball and refused to show how she would look for it, saying: "You'll never find it if you did not lose it, and I never lost any." In the course of a definition test she was asked to define the word "judge." She showed displeasure and rejected the task, saying: "I know it, but that has nothing to do with me; it is a man's job." In the task of finding absurdities in the sentences read the patient also showed peculiar behavior. Although told in advance that the sentence would contain "something foolish" which she was to find, she did not merely point out the absurdities when she noticed them. Instead, she either repudiated the incorrect statement or tried to account in some way for the incongruity. Thus, on being read the sentence about "a road from my house to the city which is downhill all the way to the city and downhill all the way home," she tried to explain it, saying: "Sometimes a road looks like a hill and it is straight." This behavior showed that she took each statement at its face value, as a communication and not as an artifact merely to be tested for its logical qualities. She refused or was unable to assume beforehand an attitude of doubt and criticism and to search a sentence for absurdities. For the same reason, she was often unable to realize that the examiner asked her certain questions not to obtain information but merely to test her knowledge; because of its artificiality, she could not fully grasp the examination situation.

Since the patient needed the support of reality even to understand the simple, immediate meaning of a sentence, one would expect that sentences or stories which, besides their primary obvious meaning, have a second and more general significance would be quite inaccessible to her. In fact, all attempts to make the patient understand the moral of a fable or the general meaning of a proverb ended in failure; she understood only the immediate meaning and never saw it as an instance or an illustration of a general rule. On one occasion the examiner attempted to explain that a proverb is applicable to different situations, pointing out that one may say "Don't cry over spilt milk" to some one who is worrying over lost money. The patient was then asked what the proverb would mean in this case. The answer was: "Don't cry over spilt milk because you can go out to the store and get some more milk." Examiner: "But we were speaking about money." Patient: "Yes, maybe you have lost it around the building." The two situations remained isolated for the patient, since she never rose to the level of a general rule which could connect them. She was unable to master the duality of the concrete and the more general meaning implied in proverbs and fables. Language for her, although formally unimpaired, was situational language and that only. It could be used for communications based on reality, but it did not become, as it does with normal persons, an efficient tool for abstract thinking.

Leaving the field of language, I turn to tasks of a different nature; namely, those in which the patient is given a number of objects and has to organize them in some way. As has been shown in many investigations, the response to this type of task shows clearly certain characteristics of the subject's thinking.

In the first experiment of this kind the patient was given a number of small pictures of different objects, schematically but clearly drawn. The pictures were spread on the table in a haphazard arrangement, and the patient was asked to sort them, putting together the objects that she thought belonged together. A normal person when given this task would quickly organize all the pictures into large groups, such as persons, animals, plants, tools, household utensils, vehicles and the like. The patient when asked to place together objects of the same kind at first declared that there was only one picture of each kind. She would not group them in any way, but named or described each picture separately. When the examiner pointed out that certain pictures might be grouped together, e.g., because they all represented animals, the patient disagreed and emphasized the individuality of each, saying, for instance: "Yes, but they go to different places; the cow goes in the barn, the hare in the fields." It took a great deal of urging and help on the part of the examiner to make the patient attempt any grouping at all. When she did attempt it she did not try to organize all the pictures into larger groups as would a normal person; the associations she made seldom extended to more than two or three objects. The following are a few examples of such associations. The picture of a nest and that of a tree were placed together with the explanation "you find the nest on the tree"; a dish was placed with a cup because "we can put the cup in the dish"; a coat, with a baby because "baby wears a coat"; a child, with a cup "because the child drinks out of a cup." A fish was placed with vegetables because "fish goes with the pumpkin"; when the examiner transferred it to the group of animals the patient at first objected and then, noticing the picture of a cat, said, as if with sudden insight: "Oh yes, the cat eats fish; sure." It is readily seen that the objects were grouped not on the basis of belonging to the same general class (such as animals or plants) but for one of two reasons: Either they occurred together in space or they were parts of the same action. In both cases the objects were seen as belonging to a concrete spatial-temporal complex and not as members of an abstract class. Sometimes objects were placed together which to the normal person seem to represent a definite class, such as animals, tools or furniture, but when the patient's explanations are taken into account one sees that to her these groups were essentially spatially determined complexes. The animals were declared to belong together because they are found outside, "because sometimes when you walk you see them." The group of tools was designated as the cellar and that of furniture as the girl's house, and later other objects were added to this group with the explanation: "You could also find a coat in a girl's house, and a man." When the examiner placed together three pictures representing persons, the patient agreed: "Yes, the girl could stay with the man and the baby." Later she put the picture of the baby farther away, saying that the baby liked to play alone. The difference between this concrete bond of "living together" and the common "belongingness" in a general category, such as that of "human beings," is obvious. Summarizing the results of this experiment, one may say that the patient considered single objects as individuals and never as representatives of a class. If she had to group these objects she did so on the basis of concrete situations or of casual associations between the individual objects and not on the basis of abstract similarities.

Among the tasks given the patient was one that had a structure analogous to the task of sorting, i.e., the task of finding similarities between two or more objects named by the examiner. The results of this test supplement and confirm those of the sorting tests. If the objects named suggested an obvious similarity and evoked the same concrete situation the patient occasionally solved the task adequately. Thus, she was able to tell that wood and coal both burn, that apple and peach are both eaten. When more than two objects were named and the point of similarity was less concrete, there were failures of the same kind as in the sorting of pictures. Although in this test the instructions require explicitly the naming of similarities between objects, the patient might form concrete complexes of an entirely different nature. Thus, when asked for a similarity of a book, a teacher and a newspaper, she answered: "The teacher reads a newspaper and a book." At another time she declared that they were all alike because "a book is for reading; a teacher uses the book, and a newspaper is like a book, isn't it?" Two objects were connected by action and two by similarity, and the patient thought that they all belonged together. In other instances she simply denied all similarity of the objects named, describing each separately or insisting that they were all different. This sometimes happened even with objects for which the similarity had previously been correctly given. Success or failure depended simply on the traits of the objects which happened to strike the patient at a given time. Wood and coal were found similar by the patient at one time, because they both burn; at a later date, however, she insisted that they were totally different, since one is brown and the other black. There was no active search for similarities on the part of the patient, as there was no active attempt in the sorting experiments to organize the totality of the pictures. If the objects named did not evoke by themselves an idea of similarity the patient could not do anything about it. If of three objects named only two formed a natural unit she merely omitted mention of the third object. She was unable to survey the objects actively with the purpose of finding a group into which all would fit and did not realize that the point of view may be changed arbitrarily. Once a similarity had presented itself to her, it was the similarity; she did not conceive the possibility of another.

To illustrate the difficulty of finding a similarity among three objects named, I may cite the record of another schizophrenic patient, who in this respect presented a clear picture. On hearing the names of the three objects he usually repeated them in an astonished tone, as if startled by their being mentiond together, and then named a similarity between the two objects of the three which easily formed a similarity unit. For example, "book, teacher, newspaper" evoked: "Book and newspaper are both reading matter"; "Wool, cotton, leather"; "Wool and leather are both durable." Examiner: "And cotton too?" "Not in respect to wool and leather!" To "rose, potato, tree" the response was: "Rose and tree are both foliage . . . Oh, did you say potato plant or just potato?" "Potato." "Then just two of them." Here the patient attempted to fit the third object into the complex evoked by the first two objects, but failed because of his rigid dependence on words. For him each object had a name and only one name, and he rejected the idea that the same generic name might be given different objects or the same object be described by different names. Since the word "potato" could not be taken as signifying a plant, it was simply left outside the evoked complex "foliage." No attempt was made to find a category that would include all three objects.

Thus, the questions on similarity, besides confirming the results of the sorting experiments, bring out especially clearly the passive attitude of the patient as compared with the conceptual approach, which is characterized by an active search for similarity.

Sorting of pictures was supplemented also by sorting of colors. In this test she committed none of the gross errors occasionally made by a patient with a cerebral lesion. Thus, in sorting the Holmgren wools she did not place together skeins totally different in hue; with a skein as a sample she could pick out all the nuances of the same color. Yet she did it unwillingly, all the while remonstrating that in reality they were different and should not be put together. "This is a different green—see what I mean? The regular way you could put only one together [i.e., each nuance by itself]. If you were working in a mill you would put one together, so they don't get mixed when you make a ball with them, see?" To place together the different nuances was an incongruity for the patient because for her they were individual colors, not representatives of one general hue. Even in sorting blocks painted in only four colors the patient met with difficulties. The smallest differences in brightness caused by the fact that some of the blocks were dirtier than others and also differences that had nothing to do with color as such made her hesitate in putting blocks together: "This is entirely different, because it has got little holes in it. This looks like a dirty yellow. These are different blues. And this one is a different shape."

The inability to abstract from any aspect of the offered material was also responsible for the patient's failure in the Kohs cube test. In this test the subject is presented with colored patterns painted on cards and is told to build up the same designs out of wooden cubes the sides of which are painted in different colors. This test has been analyzed by Goldstein, who used it both with schizophrenic patients and with patients with cerebral lesions. Since the performance of my patient corresponded exactly to the picture described by Goldstein, I shall not describe it in detail. Generally speaking, failure occurred because the patient was unable to abstract from the differences of size, dimension and outline which exist between the design drawn on the card and that reproduced with the blocks. It was impossible for her to disregard any aspect of the material and to consider only the aspects which were essential for the task at hand. Even when the examiner made the model out of blocks and asked her to reproduce it she was worried by the fact that the sides and under surfaces of the blocks differed in color in the two constructions, although this had nothing to do with the design on top.

All the tasks thus far described reveal the characteristic pattern of the patient. She was dependent on the given material as it impressed her at a given moment and was unable to organize it spontaneously by applying to it certain categories or points of view. There is, however, another point to be considered. In all the tasks in which the patient failed or achieved only poor results, she often showed extreme restlessness while working or even tried to drop the tasks. Although she never directly refused to perform any test and kept telling the examiner: "I get you; I know what you mean," actually she often substituted another activity for the one required of her, e.g., describing pictures or colors for sorting. One might ask, therefore, whether her failures were not due to a general lack of attention and perseverance.

In this case one would expect to find occasional weakness or fluctuation of attention in all the tasks, regardless of their nature. This, however, was not the case. In a number of tasks which will be described later the patient invariably showed great perseverance and good attention. Also, she seemed to gain great satisfaction from these activities. When engaged in them she gave an impression of content and calm, strongly contrasting with her nervousness during the occupations already described. Following Goldstein's terminology, one may speak of the occupations in which the patient functions harmoniously as "adequate tasks." The following questions must then be asked: Do all the adequate tasks have certain characteristics in common which make them acceptable and gratifying to the patient? If so, what are these characteristics? In order to answer these questions one must at first consider the tasks separately.

The patient's favorite task was the one which she called "dictionary work." It consisted in copying from the dictionary all the words on a page with their explanations. Several pages were copied in this way without mistakes, but no attention was paid to the meaning of the words, and not a single new word was learned by the patient in the course of this "dictionary work." Similarly, whole pages were copied from other books without the patient having any idea of the content of her writing. The utterly mechanical nature of her copying was clearly revealed when the examiner asked her to copy only certain names from a catologue in order to make a mailing list. The patient was unable to follow even the simplest rules of selection, such as copying only the names marked or omitting the degrees following the names. Only the most striking marking of everything that had to be copied led to partial success. The copying of drawings was also often undertaken by the patient; it was done as thoroughly as the copying of print. Thus, the series of drawings representing the same design with slight variations only (Stanford-Binet scoring card for designs) was rendered correctly to the smallest detail.

Another favorite occupation of the patient might be designated as "taking an inventory" of her surroundings, an activity which reflected her unusual interest in the objects around her. Even while occupied with some task, she often stopped to examine an object at which she happened to glance or to make a remark about it. At other times she made more systematic investigations, walking around in the room, picking up or touching one object after another and all the while commenting and inquiring about them. "A basket—what is this nice to put in? This is nice paper—can I touch it? It is yellow. This piece is pink. What is this—a pencil sharpener? What do you do when you want to clean it? That is a telephone book, isn't it? Who made these pictures? Did you snap them? You don't know who snapped them?" This eager desire of the patient to investigate the objects in the room and to determine their function reminds one of the behavior of patients with agnostic symptoms, who sometimes start spontaneously to investigate their environment, rejoicing in every recognition of an object. Often the patient was not satisfied with naming or describing the objects but took a sheet of paper and wrote down their names or made drawings of them, displaying the same attention to details as in her copying activities. She was best satisfied if she could place an object on paper and trace its outline. Sometimes she wrote on the drawing, thus combining the two methods of "inventory taking." She made, for instance, a detailed picture of the plant in the examining room and wrote "straw" on the part showing the flower stand to designate the material of which it was made; under the drawing she wrote: "In the plant we put water to keep it green." In spite of her mastery of the technic of drawing, the patient never drew anything without a model. In her literary productions the situation was the same. When urged by the examiner to write a story she had recourse to description of the momentary situation and delivered "stories" of the following type: "We are working at twenty past 1 [she had asked the examiner about the time]. We read books to study. The room looks very neatly. I come in every day to study with Dr. H. The radiators are heated. Keep windows open for air. The desk has many books to read. There are many buildings here that are made of brick and stone." The patient herself fittingly described her literary activities as "making sentences about things."

In reviewing and comparing the tasks just described, one finds that they are all characterized by exact reproduction of some given model. This finding provides an answer to the question as to what it is that makes a task adequate for the patient. She succeeded and obtained satisfaction from her work when she was not required to organize the material spontaneously but could center and anchor her activity in a single object. She was best satisfied when she could copy her material step by step. The unswerving attention displayed by the patient in this occupation was not the cause and explanation of her success but was itself only a consequence of the particular structure of the task. The patient completely accepted the tasks that she could solve, trying to escape or to modify those for which she had no adequate means of solution.

The analysis of the adequate tasks thus confirms indirectly the results obtained from the analysis of tasks in which the patient failed. Both her failures and her successes in different fields point to one underlying factor. All her performances were determined by the material, by the actual situation and by concrete reality, and this dependence was practically absolute. Within the sphere of concrete material she could make the finest discriminations between qualities, observe and point out the smallest details of objects and render them correctly through any means of description available to her. Yet she was unable to make any voluntary selection from these data or to organize them according to any principle—she was actually at the mercy of the given material as it impressed her at a given moment, and she could not detach herself from the given situation. She was unable to see a thing as representing something else: to see a skein of wool as a sample of a color, a picture of a horse as representing a class of animals or a story or saying as representing or exemplifying some general rule of behavior. To maintain the duality of the immediately given and that which it represents was outside her possibilities.

The patient thus presented in the extreme the loss of the categorial attitude and a reduction to the level of concrete, situational thinking and acting. Definite indications of such primitivization have been found in many schizophrenic patients, but whereas in most cases this defect appears as one trait among others, in this case it seemed to play the central role in the psychotic picture. This patient illustrated a type of intellectual disturbance found in schizophrenia which has been defined by Kasanin as a "primary thought disorder." In cases of this disturbance the thought disorder stands in the center of the clinical picture. It develops rapidly and leads to profound intellectual deterioration.

My patient's failure in all tasks requiring the categorial attitude was striking and extreme, approaching closely the behavior displayed by patients with cerebral lesions. Furthermore, the defect in this case was not obscured by any bizarre productions typical of other cases of schizophrenia. Practically all the failures and shortcomings revealed in the tests could be traced directly to the same general impairment.

If the primitivization of thinking had as important a part in the structure of the patient's psychosis as appears from the tests, one would expect the effect of this disturbance to be apparent also in the patient's behavior outside the experiments. One of the most conspicuous characteristics of this behavior was a peculiar lack of orientation. Viewed superficially, the patient seemed oriented for person, time and place. She knew the name of the hospital and recognized that the persons around her were physicians and nurses. Yet closer examination showed that she had not full insight into the nature of the institution or into the essential factors constituting it. Rather, her conception of the situation was characterized by a peculiar displacement of emphasis from the essential to the less important aspects. This inadequacy became clear when the patient attempted to explain to the examiner the reasons for her dislike of the hospital. This house was too big, she said; she did not like to be in such a big place; she liked to live in a small house or in a small room because, as she put it, "in a small place you can lie down on a couch after dinner, can go out into the yard and hang clothes, can go to town." Here she never went out; she would have liked to go to the city on a bus "in a regular way, as I was taught." In admiring the furnishings of the examining room, she contrasted them with the bare-ness of the wards: "Outside there is nothing there; I feel better when I study, sit in a cozy little room like this one."

These complaints conveyed vividly to the listener that the patient was depressed by institutional life, with its compulsory routine and lack of freedom. When the examiner once met her usual complaint about the size of the rooms by saying that a movie theater is large, too, the patient promptly replied: "Yes, but you go there just for awhile and then go home—you don't live at a show!" Yet usually she was unable to express this general complaint in any way other than by referring to particular, concrete situations, apparently not relating them to each other. The social structure of the hospital—the relative roles of the physicians, the nurses and the patient—was also not clear to her. For instance, she seemed to feel that the examiner's life was better than her own, a life which the patient took as her ideal, saying: "When I go home that's how I live—like you! I will have a new dress, and I'll fix my hair and keep clean." On the other hand, however, she was unable to conclude from this difference that the observer's status in the hospital was different from her own; she was astonished to find that the observer did not eat with the patients and came and went as she pleased. Hearing that the observer came from another town, she said sympathetically: "Oh, you are lost here, too! . . . You don't like to be here; you want to live in a small room by yourself, don't you!"

The lack of orientation found expression also in her constant complaints about being lost, not knowing her way about and not knowing anything about the action and purposes of persons around her. In speaking about her fear of getting lost on the hospital grounds, she asked the examiner with astonishment: "You can come from any side and don't get lost?" In speaking of the other patients, she said: "I don't want to get lost with those girls walking around. I do not know who they are and where they are going—maybe they have to go to their homes." On hearing steps in the next room, she asked: "People are going out—are they going out for their own business? Do they work in offices like we do?" On having had to wait in a strange ward, the patient complained: "I don't want you to put me there because there are so many doors there, and I don't know where to go. They should have names on them, like doctor's office, or nurse's office." In trying to overcome this feeling of disorientation she often declared emphatically that she was not afraid of getting lost, that she remembered all places. Once she attempted to draw a map of her surroundings; she made a cross on it and, pointing to this, said: "I have to keep close to my mark so I don't get lost with the girls." The examining and explaining of this map seemed to give her great reassurance.

Comment

How can this clinical picture be related to findings in the experimental situation? It is probably in accordance with the prevailing conception of schizophrenia to explain this particular kind of disorientation by the emotional estrangement of the patient from her environment. The results of the experiments described suggest, however, a different explanation. Without denying the importance the emotional factor may have had in the primary production of the disorder, one may assume that the immediate cause of the patient's disorientation is the loss of the categorial attitude. In actual life, as in the experiment, she was unable to transcend the concrete situation and to see it as signifying something else. That is why her complaints were limited to particulars, such as large rooms or strange persons, and gave one the impression of inadequacy. If one assumes that the loss of categorial attitude in this patient was of recent origin and that previously she had understood normally the wider implications of a situation, it is clear why she had a feeling that something eluded her understanding. This feeling found clear expression in a peculiar question occasionally asked by the patient. While examining objects in the room or working at some task, she would suddenly say, e.g.: "I see it blue—do you see it the way I do?" or "Do you read it the way I do?" and wait anxiously for a reassuring answer. The subjective feeling of disorientation and the recurring complaints about being lost can be traced to this feeling of not being able any longer to understand and to master a situation. The emphatic declarations, on the other hand, of knowing her way about or of understanding the task probably represent her method of fighting this feeling. Her unusual preoccupation with single objects, the taking of the inventory as I called it, can be understood also as representing a fight against disorientation. Feeling unable to grasp the full import of any given situation, she tried to maintain her hold on it by clinging to what she could grasp clearly, that is, the individual objects with their qualities and functions. They were for her the only terra firma in the uncertain world which eluded her comprehension.

What is the theoretic significance of the analysis of the case here presented? It is not, as may appear, the stressing of the importance of intellectual, as contrasted with emotional, factors in the schizophrenic picture. The reduction or loss of the categorial attitude is to be considered not as a change within the intellectual sphere alone but as a basic disturbance in the functioning of the total organism. The intellectual and the emotional disturbances are probably only two manifestations of the one basic change. Furthermore, the cause of this change cannot be ultimately clarified by means of a psychologic analysis like that just given. The striking resemblance of the patient's behavior to that of a patient with a cerebral injury, while it appears to lend support to the theory of an organic origin of the schizophrenic disturbance, is actually not a proof thereof. The similarity may be merely the consequence of the fact that disintegration of the organism follows the same general lines regardless of the original cause of the disease. The especially strong resemblance of the symptoms in this case to those in a case of cerebral lesion may result from lack of productive elaboration of the primary defect, which in other cases of schizophrenia often tends to obscure the original defect. Whatever the reasons for the particular clarity of the picture presented, the case demonstrates the importance which the loss of categorial attitude may have in certain varieties of schizophrenia. In the case presented this loss not only was one symptom among others but was at the core of the disturbance and enabled one to understand the given clinical picture in most of its specific characteristics.

Attempts like the present analysis to relate various manifestations in a case to the underlying disturbances should replace the mere enumeration of symptoms. Only an analysis that aims at a unitary conception of the symptoms in a case holds the promise of better understanding and more adequate classification of the manifold disturbances which constitute the schizophrenic disorder.

SUMMARY

A case of schizophrenia was subjected to an intensive psychologic study with the view to determine the structure of the thinking disturbance and its role in the total clinical picture. The patient was given a great variety of language and performance tests, particularly tests which required organization of material from some definite point of view, e.g., sorting of pictures or colors. The results of all the tests indicated that the central disturbance was loss of the "categorial attitude," i.e., incapacity to perceive objects as members of a class or as other than concrete and unique. An attempt is made to relate to this central disturbance certain peculiarities of the clinical picture, especially a peculiar disorientation shown by the patient.

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DETERIORATION AND REGRESSION IN SCHIZOPHRENIC THINKING *

by

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In the study of schizophrenic thinking, it is possible to make use of two diametrically opposed avenues of approach to the problems of deterioration and regression. From one direction, the productions of schizophrenic adults can be compared directly with those of *normal children* under the same conditions. By this method one can determine empirically whether or not the two forms are alike, how they compare as instruments of social communication, and to what extent one would be justified in characterizing the products of schizophrenic disorganization as childish. At the opposite end of the scale, one can seek light from the closing phases of life, and determine whether or not *senile deterioration* yields a comparable product. The aged present the investigator with a naturally produced organic deterioration of complex functions, in which there is enough homogeneity to permit one to draw general conclusions.

VERBAL PROBLEMS

In previous work on schizophrenic thinking, we emphasized the loose cluster-form of organization and the peculiar use of inexact approximations. Our subjects seemed to throw in, more or less indiscriminately, elements that could be thought of loosely as belonging to the general subject, but which lacked the closer organization one would expect of an adult. The necessary links between the constituents were not adequately expressed, either spontaneously or when asked for (*asyndesis*). As a consequence of this lack of internal organization, there was a conspicuous failure to eliminate conflicting and irrelevant elements, and to maintain clear boundaries. These defects, of which we shall give examples, resulted in confusion not only to the hearer, but to the patient himself.

The heart of social organization is, naturally, social communication.

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The work was done at the Henry Phipps Psychiatric Clinic, The Johns Hopkins Hospital.

This depends upon the ability to see that the instruments of communication are mutually understood while they are being used. Any normal adult must be able to define his terms to a reasonable degree upon demand. That is, he must be able to become more exact by limiting the reference of a term or a phrase he uses; and to accomplish this end he must be able to discard whatever is unimportant or only partially relevant. Such capacity is just what is absent in schizophrenic disorganization. Instead of being able to give something more limited and more specific upon demand, the schizophrenic is often able only to throw in further approximations. Social communication suffers. His use of these unprecise substitutes in place of exact terms and phrases is an important factor in isolating still further the already socially disarticulated patient.

In this process there develop personal idioms, which become so individualistic that they prove to be practically worthless as instruments of communication. We may give two illustrations. One patient, working with us on a sorting task with blocks, remarks spontaneously after an interruption, *"Business walks as usual!"* A more obscure idiom occurs in the following, *"This substantiation substantiates a generality for the objects."* Only because of our personal contact with the patient and our knowledge of the setting in which his statement occurred, were we able to translate it into, *"This characteristic* (i.e., being made of wood) *constitutes the basis for a generalization with reference to these objects."* Otherwise, it would have remained, from the social standpoint of inter-individual communication, a useless jargon. A recent paper by Woods gives other examples of schizophrenic approximation taken from language protocols.

Our earlier method consisted of confronting a selected group of 25 schizophrenics, all of whom showed definite scattering, with incomplete sentence-fragments. To complete these correctly, it was necessary for the patient to express a causal relationship. It was the analysis of these results that first gave us the distinctions we have made above. Using the same method, we have ourselves also studied the logical performance of a group of normal children. When the results of these two studies are placed side by side with those of our schizophrenics, we find the two products quite unlike in essential respects. This finding is especially true of the use of inexact approximations, the asocial personal idiom, and the progressive increase in unclearness, which were to be found in our material almost exclusively among the schizophrenics. The schizophrenic process of disorganization develops its own pattern, and this pattern considered empirically is quite obviously not that of the child.

If the path of disorganization does not lead the patient back to childhood forms, does it, in the other direction, simply follow that of any general deterioration? In other words, is what we find in schizophrenic thinking really the outcome of disorganization at all, or should it be looked upon as just a kind of premature "dementia"? To meet this phase of the problem we turned our attention to cases of *senile deterioration* for further comparisons. We selected 22 hospitalized senile patients, all of whom were reasonably cooperative, and all of whom gave us gross clinical evidence of organic deterioration. These were confronted with the same task, and the results we obtained were then compared. The logical performance of the senile group was, on the whole, quite poor; nevertheless it lacked almost completely the characteristics we have described as typical for our schizophrenic group. The unprecise substitute terms and phrases were rare; and in place of intrusive preoccupations the seniles gave only mild distortions on the basis of disorientation and simple circumstantiality. The organization of their thought was also quite unlike that of the schizophrenic patient.

MANIPULATION

We then went one step further and gave representatives of both senile and schizophrenic groups a manipulative task with blocks. This course of action introduced a more objective procedure, in which the intermediate steps could be watched and recorded. It gave rise also to verbal productions which turned out to be even more informative than those of the earlier method with sentence-fragments. Since we were interested specifically in *deterioration,* we selected for this part of the study 5 of our most severely disorganized schizophrenic patients and 6 seniles who gave clinical evidence of serious deterioration.

The test used was that introduced by Hanfmann and Kasanin, and by them used in their work with schizophrenic patients. The material and the method have already been described and illustrated by them. Briefly, the experimental material consists of 22 wooden blocks varying in color, shape, height and size. On the under side of each block is written a nonsense syllable. Regardless of color and shape, *lag* is written on all large tall blocks, *bik* on all large flat blocks, *mur* on the small tall ones, and *cev* on the small flat ones. In accordance with their method, "the subject is told that there are four different kinds of blocks, that each kind has a name, and that his task is to find the four kinds and to put each of them into a separate corner" of the square board used for the experiment. In our work we always started off with these standardized instructions and followed them through as closely as the patient's progress justified. Since we had, however, selected very severe cases for our work, it was often found to be quite unprofitable to adhere rigidly to these directions. During the entire experimental period everything said or done by the subject and by the experimenter was recorded in detail.

In some respects the two groups of patients were quite comparable.

None of the patients could solve the problem satisfactorily. In all of them the tendency to maintain the "concrete attitude" was strong. Blocks and names of blocks were often treated as individual things, rather than as related members of a group. When the "names" were all turned up, so that the form and color could be ignored completely, some patients were able to solve the problem by paying attention solely to the nonsense syllable; but when we asked them to repeat the performance with the syllables hidden again, they failed. None of them could formulate the problem in words when it was completed for them by the experimenter under their eyes; in their attempts they simply enumerated the individual blocks in each group.

The single most striking characteristic of our schizophrenic patients' attempts at solution was their inability to maintain adequate *boundaries*. Faced with this definite, arbitrary task they could neither restrict themselves to its limits, nor keep other material from intruding. The immediate perceptual field, the patient's thinking about absent things and events, material derived from his personal preoccupations—all might become worked into the problem itself, and so inextricably as to make the solution depend upon extraneous conditions that could not possibly be confined to a single frame of reference. A few selected examples follow.

The work is being done on a large office desk. The patient sits manipulating the blocks on a square board in front of him. I face him across the desk taking notes. He says at one point, "That pencil is yellow so it ought to be in the game." ("All right, let's put it in.") "No, I'd have to make a block of it like this"—the yellow cube. Later on he points to my forearm, "You've got red blood in your arms. That's got something to do with that"—a red block. Another patient gives as his guiding principle, "Square angles, I'd say," indicating by gesture the outside angles of the board. (He had actually grouped by color.) In another place I indicate a group he has chosen. ("Why do these belong together?") "These are kept in a box together," pointing to the box across the table. One patient expressed clearly this inability to restrict when he said, *"I've got to pick it out of the whole room; I can't confine it to this game."*

The patient's special preoccupations, as one might expect, also play an important role. It is not merely that they distract the patient from his task; on the contrary, they get right into his manipulations. In the middle of his work one patient looked at the divisions marked out on the board and remarked, "Each man has to have his way of walking on earth. The earth is divided up like this," etc. This observation is directly in line with his known preoccupations. Another patient brings in her preoccupations in asking if she shall make a division of the blocks "according to the children that are in the world already." In the development of this woman's illness marked fear of pregnancy, the arrival of an unwanted child, and conflict between the religious beliefs of her husband and her dread of further pregnancies, were important features in the development of her present status.

Another outgrowth of the loose cluster-form of schizophrenic thinking is the simultaneous presence of contradictory constituents occurring, of course, in the absence of gross memory deficits. Asked for the difference between two groups, a patient says smoothly, "There's no difference; they're different shapes." Of another group she has made she says, quite incorrectly, that what is common is "their shape, their size." ("Is their shape the same?") "No." In a number of instances the schizophrenic patient, while looking right at a grouping, made statements about it which directly contradicted the perceptual pattern. Apparently with the lack of close organization such conflicting systems are able to co-exist simultaneously.

The feeling that things "belong together," which occupies so conspicuous a place in schizophrenic thinking, is not in itself pathological. It was, however, offered by the schizophrenic patients as the explanation of groupings in simple situations where the normal adult would have been able to characterize the group in one word. For instance, one patient makes up a consistent group of blocks on the basis of color, but can only say, "It's a relationship in the group in my mind; feels better to have them together." Another forms a color group but accounts for it by saying, "They just seem to be understanding." The word "color" would have been adequate, and obviously corresponded to the objective manipulations.

By contrast, our deteriorated *seniles* were quite well able to restrict the problem within the arbitrary limits imposed by the experimental set-up. It is true that they, too, were unable to solve the problem satisfactorily; but the peculiar over-inclusion of extraneous and absent material we have described above was not found in our senile group. They showed less variety in their modes of attack than the schizophrenics; they stuck monotonously to one or two prevailing principles, usually color, and often went on doing so in spite of coaching and in the face of repeated and insistent correction. An interesting phenomenon was the tendency toward apparently irresistible completion that appeared over and over among our seniles. Those senile patients, for example, who clung to color, if constantly encouraged would persevere ploddingly in the use of some other basis of classification, until two or three of the same color *chanced* to come next to each other. Then an increased *tempo* would immediately appear and everything would landslide to color again. The picture they presented in their attempts at solution differed widely from that of our schizophrenic patients. Just as we did in our earlier work with the sentence fragments, we find the patterns of thinking in senile deterioration here fundamentally different from those in schizophrenic disorganization.

SUMMARY

On the basis of the studies outlined above it is possible to make certain general statements about thought in our schizophrenic patients. In the first place, the structure of their thinking differs in important respects from that of the *normal children* we have ourselves studied. The child's thinking is partially conditioned by two factors: he suffers from a relative dearth of material, and his organization of thought is still very imperfect because it has not yet been forced by social necessity into the adult logical form. The disorganization of the schizophrenic, on the other hand, results neither from inexperience nor from a dearth of material; and its pattern gives us no reason for assuming that in his thinking he has returned to a childish structure. The pattern his disorganization develops is something that is new in his own life history. The child, for his part, having not as yet developed adult patterns, is differently organized from persons whose functional patterns, having developed once to various stages of maturity, are now in the process of disintegration.

At the other end of the life scale we find that in *senile deterioration* the form and content of thinking lack the outstanding characteristics of schizophrenic disorganization. Our seniles apparently suffered from a dearth of available material; and their organization, far from being loose and too inclusive, was rather too simple and too restricted. The monotony and persistence of their relatively uncomplicated modes of attack were quite impressive; by comparison, our schizophrenics were versatile and flexible in their attempts, even though in the end just as unsuccessful. The seniles gave very little evidence of having to include in the task the environment and their preoccupations. Their dikes were still up and the ocean of thought and thing remained outside, so that, unlike our schizophrenics, they were able to confine their attention within the arbitrary limits set by the experiment. Since, however, they forget almost from moment to moment, they cannot organize effectively their activity along the longitudinal time axis. Our schizophrenic patients, with relatively good memory, showed themselves unable to organize and subordinate the events occurring simultaneously in their organism—perceptual, memorial, imaginal. Consequently they included such a variety of categories at one time that the specific problems became too extensive and too complex for a solution to be reached.

We have recently reported a study of the performance of scientifically trained adults in a medium of symbolization they had practically abandoned in childhood. It demonstrated the potential coexistence in the normal adult of different levels of maturity, even within the field of symbolic activity. When, therefore, in describing human behavior, normal and abnormal, we construct variations on the theme that "the organism functions as a whole," we must recognize that the parts within this whole are not all equivalent in terms of the life history of the individual. This consideration suggests caution in the use of sweeping characterizations in psychopathology, particularly when they are based upon analogies. The results of the present investigation make it seem evident that, if we are to make use of the terms "regression" and "deterioration" to characterize schizophrenia generally, it will have to be with the clear realization that we are taking serious liberties with these concepts in the interest of convenience and brevity. The schizophrenic thinking we have found in our studies can be described neither as childish nor as that of ordinary organic deterioration.

25

THE RORSCHACH TEST IN PSYCHOPATHOLOGY *

by

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THE story of the Rorschach test in psychopathology begins, as does all Rorschach test history, in the *Psychodiagnostik*. In that monograph, Rorschach reports for groups other than "normals," as follows: feeble-minded, two grades ("debile," "imbezile"); schizophrenia, four sub-groups: orderly (*"geordnete"*), stereotyped, disordered (*"zerfahrene"*), and dementia simplex;[1] each phase of the affective psychoses; epilepsy, two varieties (*"spätdemente," "frühdemente"*); and, in the organic group, Korsakoff's disease, arterioclerosis, paresis (*"progressive paralyse"*) and senile dementia.

A survey of the literature since the *Psychodiagnostik* first came out (1921) shows that students have applied Rorschach's test, or Klopfer's form of it, in schizophrenia, the affective psychoses, intellectual defect, epilepsy, conditions incident to brain pathology, including mental status associated with frontal lobectomy and frontal lobe lesions, psychopathic personality including delinquency, alcoholism, conditions related to drugs other than alcohol (sodium amytal, mescal), in connection with shock treatments, under hypnosis, and in problems of psychosomatic medicine. A number of papers report findings in the neuroses. Two appear in the psychoanalytic literature. There are in addition communications overlapping the field of mental disorder, although not primarily in it—that is, concerned with types, with general problems of psychiatry, or of abnormal psychology, or treatment.

All the areas that have aroused the curiosity of students of mental deviation are thus represented; this, even though investigations in children are not included in the above listing. The present communication is concerned with the test as a diagnostic instrument only in adults. The

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* Reprinted from the JOURNAL OF CONSULTING PSYCHOLOGY, 1943, 7:103–111, by permission of the author and the JOURNAL.

[1] From a footnote it is clear that Rorschach intends here terms to correspond to the four whereby in English the sub-groups have been classically designated: paranoid, catatonic, hebephrenic, simple dementia (12, pp. 20–1). In all classifications he also tells us he follows Bleuler's *Textbook of Psychiatry*, 1916.

question may even be asked whether neurotics need to be brought into a paper in "psychopathology"—this in view of the now bewhiskered cliché that in this frenzied age we are all "neurotic." But the sick neurotics, those who form so large a proportion of the referrals to neuropsychiatry in a general hospital and those who, judging from the literature, are now being more and more recognized as such in private medical practice, do properly belong in this sphere of discussion.

The present paper will focus on the contribution by the Rorschach test to diagnostic method in one group, schizophrenia. Limitation of space dictates this circumscription of clinical sector. However, the reasoning growing out of findings in one disease group will be seen to be applicable to the others. Schizophrenia offers the best point of departure for several reasons. To begin with, there are the results of Rorschach's own experience with his test, largely based in this disease group. Of the 405 persons forming the frame of reference for his conclusions, in the *Psychodiagnostik*, nearly half, 188, were schizophrenic, with the rest distributed in his eleven other classifications. Also, Rorschach worked in an atmosphere permeated by Bleuler's influence. He could not help having been (to adopt a current colloquialism) "schizophrenia-conscious." Secondly, there have been reported at least three other original researches, comprehensive attempts at testing out the test in schizophrenia: In 1934 Skalweit compared Rorschach findings with clinical observations and with Kretschmer type studies of 113 patients, and treated the data statistically; in 1938 Rickers-Ovsiankina statistically compared 37 patients with 20 normal controls and validated the results clinically; in 1938 Beck statistically and qualitatively compared Rorschach findings of 81 patients, clinically validated, with 64 controls. The chapter on "Dementia Praecox" in Klopfer and Kelley, while not reporting original investigation, does summarize their experience in this disease group and compares it with that of other investigators. In addition there have been numerous significant, if less embracive, reports. Finally, shock treatment has inevitably stimulated Rorschach testing in schizophrenia—before and after treatment. Piotrowski has so far published most significant results based in systematic research.

Scrutiny of the findings in these numerous researches discloses a persistent regularity of Rorschach patterning in schizophrenia. In this disease group, the Rorschach test is a stable instrument. Thus there is agreement that $F+$ is low; color nuance tends in direction of pure color, or C; Dr is high; sequence, or order, tends towards the confused; DW (including DrW) is the most characteristic method of approach by a patient to his problems; experience balance (*Erlebnistypus*) tends in direction of C; M is not high; Po responses are characteristic; P is low. Regularities in more qualitative observations include the wide fluctuation from very good to very poor *F*+; the striking, poetic originals, blandly intermingled with bizarre percepts; contaminations; perseverations; rejections of test cards.

Most of this is language peculiar to the test. To restate this summary in everyday English: schizophrenics tend to disregard the contours of the figures, or of the figures' component parts, in their form perceptions; color saturation induces reaction from them with comparative disregard of form; they are especially sensitive to the minor, commonly ignored portions of the figure; they show lack of regularity wherewith they choose wholes, parts, and minor details for interpretation; they frequently interpret wholes as suggested by a part, or even a minor part; they produce relatively few responses of humans in motion; for their response records as wholes, they react more to color values than they do with experiences ascribing movement to the test stimuli; the happenstance that a detail is in a particular position relative to the entire figure will evoke a response ("kidneys" because located at the lower middle); comparatively few of the most common forms are perceived. They "contaminate" in the sense that they organize, in single percepts, forms normally not belonging together ("a dog, with a cat's tail that has a snake's head"). They perseverate, by sticking to the same content in the several figures.

Insofar as schizophrenics regularly react after the foregoing Rorschach test pattern factors, and other groups do not—which happens to be the fact—these findings established the test as a discriminating tool. One could in fact stop here and think of the test simply as a behavioral instrument. The psychological potency could be entirely disregarded. So much *Dr*, with *F*+ below a certain point, such and such a ratio of *C* to *M*,—and so on through the list of findings, would mean that it is a schizophrenic's behavior. The Rorschach test just happens to be the medium through which he is reacting. Conceivably one can invent any other media, or standardize conditions for observations—as in fact has been done—and obtain differentiating behavior. The Rorschach test happens to have virtues, for the purpose, lacking in the other approaches. So the stable results elicited by the Rorschach make it an instrument after the behaviorist logic. One could stop here, as in animal psychology, but to do so would not only be unfair to the test, it would be missing the most valuable contribution of the test: its penetration into the psychic life of the individual. In fact, when the behavioral findings, the results as stated by the Rorschach symbols, are interpreted into the language of general psychology, they emerge as a statement of psychologic processes in patients with schizophrenia. In turn this becomes a highly suggestive description of the way the forces in the personality interact and structuralize to issue in that behavior pattern which the clinician identifies as "schizophrenic."

Thus, certain principles as to the dynamics of the schizophrenic's personality are indicated.

The next step is to attempt confirmation of these underlying behavioral dynamics by inspecting Rorschach results in other clinical groups. These are then translated into general psychological terms, which in turn, should amount to being a description of the personality group in question. To the extent that this can be achieved, the test is validated for its usefulness in psychopathology generally.

Translating the Rorschach test findings in schizophrenics into the language of psychology, we can describe the psychologic activity in these persons as follows. They misinterpret their world ($F+$ low). This may be caused by personal needs, the distortions directed by the individual's life situation. Or it may be an impersonal process, as central control fails to cope with more instinctual ones. An extension of this interpretation, one emerging from comparative Rorschach and psychoanalytic studies of the same patients is that $F+$ also measures the strength of the individual's ego, his success in keeping it intact. The lower the $F+$, the weaker his ego. His willingness to be inaccurate is indifference to the world's opinion of his percepts. It is a lack of self-regard.

Primitive, instinctual forces dominate schizophrenic personalities (*C*); when they are sensitive to the world's opinion, the passions still rock them (*CF*). They pay attention to and see meaning in insignificant, irrelevant material (*Dr*) within their field of perception, material that their healthier fellows neglect. In attending to the component materials of their world, schizophrenics fail to follow an orderly, controlled course (sequence or order); they are not orderly or logical, by the world's standards; the more schizophrenic, the more disorderly; abstract thinking, interest in the minute, concrete-mindedness, may follow in unpredictable sequence. At the same time they frequently jump to conclusions as to the whole or larger sphere from a partial, inadequate view of their object (*DW*); the conclusion may be right or wrong; but, as in the famous case of the blind men and the elephant, it is based on inadequate evidence; an alogical approach.

An important negative finding is that we cannot necessarily predict an overtly-emerging, wish-fulfilling fantasy activity (*M*) in any one schizophrenic. This, for all that the schizophrenic is presumed to be ever molding a world meeting his heart's desire. The fact is that healthy individuals also do so. The important difference is in what each does with his dream. The sick person remains immersed in it, and apart from the world; the healthy refashions it into something of universal value. From this comparatively low fantasy life and high impulsive reactivity, it follows that the total reaction pattern is one in which the affects overbalance the trend to retreat into a fantasy life. In this we see the schizophrenic's infantile reaction habits as more important in his whole personality than his introversive trend. This is not inconsistent with the classical observation that some schizophrenics—not all—are extremely withdrawn: the "introvert type." But it is also fully consistent with the observations of the more penetrating students of this disorder, namely, Bleuler, that the uniform direction of striving and action is disturbed in them. In other words, extratensive and introversive capacities are not knit into a unitary personality texture. There is schism between these potentialities in each individual. Hence the some time complete withdrawal, with the some time unmitigated irritability.

Among other characteristics are the circumstantial, or accidental factors which may determine their thinking (*Po*). The sheer occurrence of a stimulus in a certain position is accepted as basis for the percept; critical self-correction is lacking. They participate insufficiently in the common mode of thinking (*P*). This is their particularized, or individualistic thinking, and is seen also in the extreme originality of many of their responses. The same patients whose content is bizarre also produce associations at the level of the best elicited from the healthy superiors. Here is that fluctuation of control—more disturbance of uniform striving—or Stransky's "psychic ataxia." The same disturbance appears in another sharp fluctuation, that of accuracies and inaccuracies (F + and *F* —), usually very good ones and very poor ones. In the perseverations we probably have Bleuler's "aboulia": the patient's lack of will power; he does not control the response, but is controlled by it, perseverating in the same percept that has once occurred to him. The rejections are related to the blocking, possibly an exaggerated form of the aboulia of which the patients are victims; in instances it is a form of the suspiciousness which goes with the paranoid picture. The contaminations look like the uncritical thinking above noted. They are that, and probably much more. Many of them appear certainly to be the archaic thinking which Storch has described; and the guess may be hazarded that if the logic of each such response could be worked out, starting with the patient's (hidden, to us) premise, these contaminations would be found psychologic equipment whereby the patient is handling his life's problems.

Turning from schizophrenia, we find in other clinical groups that when we inspect findings of controlled research we can report a similar experience in respect to the two major tasks: (*a*) the Rorschach response pattern is found stable within the group; (*b*) when the Rorschach symbols are translated into the psychologist's usual language, the description obtained for an individual typical of the group is an adequate statement of clinical observations. In the feeble-minded, *F* + is low — their inaccuracy; *C* varies, the unstable responding to color values, with the torpid ones showing no interest in them; *M*, which Rorschach reports as never found in them, does occur, but very rarely, their infertile imagination; in their approach to their problems, they attend to the obvious (*D*) and to the insignificant (*Dr*), but with comparative infrequency to the whole (*W*), reflecting their incapacity to generalize or think in more inclusive terms; *DW* is fairly common, their alogical thinking; experiences balance is either in the direction of color, or at the zero point for both *M* and *C*, either they act out their feelings, or they are totally lacking in feeling tones and in imagination; *P* varies with the patient's capacity to be helpful, with his conformity of mental process; really original responses almost never occur, absurd ones do from time to time—more of their thought poverty. They frequently persevere, the more so the lower the intelligence, or lack of will; they reject figures, not because they block, but for the reason that they see nothing. In two of his Rorschach activities, the feeble-minded manifest significant, positive correlations: $F+$ and *Z*; accuracy, and ability to grasp difficult relations. Both appear to vary directly as mental age. For $F+$ Beck reported *r*, .64, *PEr*, .051, in 69 feeble-minded. The later literature generally supports this indication, as do the findings with an earlier research, Pfister's. *Z* (organization), the ability to see meaningful relations, follows pretty much a straight line relation with intelligence, not only in the defectives, but for the entire range. Idiots produce no meaningful relations; in the most productive superior, the sky is the limit. In this validity the test reflects (*a*) its ancestry; it is the lineal descendant of Rorschach's *Ganz*, which he saw as an index to *Assoziationsbetrieb* or organizing drive; and (*b*) the controlled statistical method whereby it was established. When the test deviates up or down, from the expectation dictated by the patient's intelligence, an affective factor can be inferred, and is found. Elation raises, depression reduces *Z*. Also, it is dissipated in the confusion of some schizophrenics, stalled in the conflict or anxiety of certain neurotics, almost completely lost following brain damage. In all this behavior, too, it is a chip off the old block, Rorschach's *G*.

Among the other mental disorders, those accompanying brain pathology are now covered by an extensive Rorschach literature. The findings in detail cannot be recounted here. Kelley gives an excellent summary of them in his chapter on "Intracranial Brain Pathology." The general results are similar to those shown for schizophrenia, and sketched for mental deficiency. They show the individual's intellectual stamina weak, or breaking in its several spheres ($F+$; *DW*; *Dr*); retarded in speed of response; impoverished in the inner life (*M*, *C*), although individuals vary in this respect, and not a few may best be described as "spotty." The efficiency of their higher mental processes (*Z*) also varies; there is originality of the associational content. In the partially disintegrated personalities traced by the Rorschach of one of these patients, one can readily pattern out the disorganization of personality as it was described by the great English clinical neurologist, Hughlings Jackson: the patient is, after the epileptic fit, "in the strictest sense another person"; he "ceases to be his highest self, and at once or soon becomes his lower self"; the behavior symptoms we see are "positive mental symptoms, survivals, . . . on the lower but then highest level, of evolution"; . . . "illusions, hallucinations, delusions and extravagant conduct are the outcome of the activity of nervous elements . . . on the lower level of evolution remaining." The Rorschach test writes these same observations in low $F+$, absurd percepts, *DW*, *C*, odd *Dr*, confused method, and its other symbols and identifying notations.

The Rorschach literature in the other mental disease classifications is far less complete; evaluation needs, therefore, to await publication of more results. This is with all due recognition of Guirdham's and Harrower-Erickson's researches in epilepsy, Varvel's too brief paper on depression, Levy and Beck's study of the manic-depressive psychoses, Piotrowski's reports on shock therapy. While there are several reports on psychopathic personality this group suffers neglect owing to the gingerly fingers wherewith psychiatry itself handles this diagnosis. Yet there are too many individuals who can be called neither schizophrenic nor neurotic, who engage in behavior straining the patience of neighbors and relatives, when not of the law, who know what they are doing—and keep on doing it—and are finally classified in the mental hospital as "psychopathic personality." They are too numerous to be laughed off and the problems they pose to society are bound to force penetrating study of their personalities by all available tools.

Neurosis has yielded even fewer Rorschach papers. The most thoroughgoing one (on a single case) is Rorschach's psychoanalysis of one of Oberholzer's patients. More work is being done on this group than is being published. One reason, no doubt, is that these patients remain in the community. Insofar as they find their way to the psychiatrist for help, they are in the hands of the private practitioners who publish infrequently. There are doubtless men who have valuable material relative to the Rorschach in the neuroses, if they would only publish.

Nothing has been said about children. For all the mass of publication about them and the Rorschach test, the critical research is still to be carried on. It will need to be one which simultaneously searches for, and attempts to control, two factors constantly at work in each growing child. One, which among his personality manifestations, are normal expressions of his growth stage? Two, which of these manifestations are his responses to those about him, from immediate family to general cultural milieu and climate? Until the Rorschach test studies of children can halt, as it were, each of these processes in the child, inspect, and learn to know them, the Rorschach descriptions of children must remain decidedly fluid affairs. The task is a mountainous one. It requires comparable studies by means of the Rorschach, with validation by non-Rorschach methods, of every age level at which the test can be given. The personality pictures so obtained must be compared, section by section, throughout the growth years. In adults, the problem is, by comparison, simple. We know what the social norms are for adults, and what end-stages of mental disease look like. In children there remains yet to be established what are normal phenomena in growing pains, and what is regression, fixation, or other dysfunction, as the case may be.

To return to the Rorschach findings in schizophrenia, the group where stability is best established, there is gratification that this stability derives from agreement among several investigators. Complete agreement among investigators is lacking, but how significant is this?

Beck does not confirm the *W-Dr* method of approach, reported in all other investigations in schizophrenia. Kelley in trying to explain this disagreement, speculates that "in Beck's scoring he did not make use of the finer differences between *D* and *Dd* nor did he use the 'cut-off' *W* response." This criticism is hardly valid in light of the fact that the two other writers, Rickers-Ovsiankina and Rorschach, (aside from Kelley himself) with whose researches Beck's findings are compared also did not use these "finer differences," or the cut-off *W*." Neither did Skalweit whom Kelley justly credits with important work. In attempting to understand this deviating finding, this writer is led, first, to emphasize the conglomerate picture of schizophrenia which his 64 cases represent. All four groups were lumped together in a study undertaking to decipher any discriminating findings between them and the 81 non-schizophrenics. The procedure has its drawbacks in obscuring characteristic differentiating reactions in say, hebephrenics, from those in an intellectually more logical group, such as the paranoids. On the other hand, the finding may actually lead to some revision of thinking as to the kind of intelligence the schizophrenic uses. The *W-Dr* approach—what Oberholzer has acutely called the "scotoma for *D*"—would be the impractical approach. But if some schizophrenics fail in respect to *W*, may it not be that they are incapable of that generalizing process which *W* represents? This is a suggestion that can borrow support from the findings by Kurt Goldstein and his followers that thinking in groups with psychopathology, including some with schizophrenia, is concrete, and low in respect to abstracting ability. Thus, Bolles found that both her aments and dements "did not show the highest level of abstraction" shown by her normal children; the patients responded in a concrete way in tests where either concrete or abstract behavior was possible. Her "dements" were 9 deteriorated hebephrenics, a group overlapping only to a minor degree with the 64 in our study. The logic is not being offered here as a conclusion but as a suggestion.

Other lacks of agreement are in respect to color naming; the shading response; the reversal of figure and ground. Skalweit emphasizes color naming more than any writer. Several writers stress it in brain pathology, and in epilepsy. I have found it in too many other clinical groups, and in the healthy, to warrant giving it weight as a discriminating finding. It can, no doubt, add critical information in a picture already patterned out. The shading response, the different varieties of them, and their psychological meaning, are still the big moot question in the Rorschach armamentarium. Discussion of them must be postponed until we know more about them. As to reversal of figure and ground noted by Beck but ignored by others, there is little doubt but that schizophrenics studied by him do this. Kelley's comment that "this is not rare in normals," is well taken, if he refers to normals of superior intelligence. Its occurrence in a person in the average or lower intelligence brackets, and not schizophrenic, cannot be recalled by the present writer. The ancient observation concerning the propinquity of genius and madness seems to gain support.

In Beck's schizophrenics change of tempo, that is wide fluctuation in number of responses to each figure, is another characteristic too persistent to be a chance matter. Change of tempo consists of wide fluctuation in number of responses to each figure, and in time of first response to the several figures. A special form of it is an extraordinarily large number of responses to the normally less productive figures (V, VI), and few, with rejection trends, in the usually productive ones (III, X). This fluctuation of tempo is work of the same process, it may be supposed, which produces the alternation of very good and very poor $F+$; and very good and poor originals.

The "monotopical" record is another that other writers do not mention; perhaps because it is one form of perseveration. It differs from the more common variety of perseveration in two ways: (*a*) it may actually become the sole topic in the entire record, usually sex; in perseveration, the same percept recurs over and over, but not exclusively; (*b*) the topic in the monotopical record always has a personal value to the patient, representing something he is doing, to meet a need. In perseveration the monotopical record more frequently appears to indicate only the complete passivity of the individual; the inability to free himself from a percept he has already experienced. The caution with reference to the monotopical record is that it sometimes occurs in non-schizophrenics. This writer has observed it in one adult in the higher range of mental deficiency; and in a woman in an extremely excited phase of a manic-depressive psychosis. In the former patient the topic was the "stomach-bone," which may have been related to epileptic fits which he suffered, and concerning which he was very sensitive; and of course the very fact of the epilepsy complicates this picture. In the woman, the male genital, or the sexual act, was seen in every figure. A personal need may here be hypothecated, even if the mechanism of the psychosis is different from that in schizophrenia.

SUMMARY

To recapitulate the situation at present as to the use of the Rorschach test in psychopathology: sound research in schizophrenia has been reported from various quarters, and Rorschach's own experience in this group has an especially broad base. The test's consistent stability of results in this group warrants confidence in it as diagnostic aid in this disease. The principal researches agree in all except one of the dozen or so major Rorschach factors. The lacks of agreement are in respect to less important details.

Of the other clinical groups, mental deficiency and conditions incident to brain damage have yielded satisfactory results. For the other classifications, there are a few valuable reports in epilepsy, the affective disorders, the neuroses, and the psychopathic personality, but the published material is scant and the Rorschach pictures in these groups are obscure. This is probably less true in neurosis than in the other classifications, but the publications are still needed. In respect to children, our knowledge is very incomplete, since no systematic Rorschach research has been carried on attempting to evaluate the respective contributions to personality of (*a*) growth; and (*b*) interpersonal and environmental impact on the child.

The stability which the Rorschach test has shown warrants its continued systematic and controlled application to other groups within the field of psychopathology.

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INTELLIGENCE IN MENTAL DISORDER*

by

Anne Roe and David Shakow

THIS monograph analyzes the results of Stanford-Binet (1916) examinations given to 827 patients of different diagnostic groups at the Worcester State Hospital during the years 1929 to 1933. Each diagnostic group is subdivided into two groups according to the representativeness of the test. By a representative test is meant one for which the subject was sufficiently accessible and cooperative that the examiner felt that the obtained results gave a reasonably accurate picture of the patient's functional level at the general period of the test. The material is presented under three general headings: (1) comparisons of representative and non-representative test performances within the various diagnostic groups; (2) comparisons between each of the various representative diagnostic groups and a normal group and (3) comparisons between and among various diagnostic groups. Comparisons are by differences between means for total test, vocabulary, digits forwards and digits backwards and by chi-square analysis of the individual items.

REPRESENTATIVENESS

In psychometrics, as in experimental psychological work, we have shown that the presence or absence of cooperativeness has considerable effect on the results in psychotic groups. In general, the effect of representativeness is rather less than that of psychosis, but it is of the same nature. The situation is not the same in all of the diagnostic groups. In the groups severely affected by psychosis, non-representativeness has a fairly large additional effect. There are several groups which are little affected by psychosis, but in which some effect of non-representativeness can be demonstrated, namely, the manic-depressive and the catatonic dementia praecox.

It was clear that the judgment of representativeness or non-representativeness was more difficult to make in some groups than in others. In the groups feeblemindedness with psychosis and without psychosis the criteria as hitherto applied seemed not to differentiate accurately and they also proved not entirely adequate in the unclassified dementia praecox group. In the case of the feebleminded group it seemed evident that the difficulty arose from the specific situation—unsatisfactory responsiveness due to stupidity and unsatisfactory responsiveness due to psychosis are particularly difficult to differentiate. In the without psychosis group, the difficulty seemed to be largely in the samples, and in the unclassified dementia praecox group both difficulties seemed to play a part.

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As a result of this study, we felt that our disordered-normal comparisons would be of greater value if we excluded the non-representative in the disordered groups. The effect of this selection must be kept in mind in consideration of our further results. Because of it, the degree of significance and the number of significant differences will be lessened, and the net result is that while some true differences may not appear, we may be reasonably certain that the differences which do appear are more dependable differences.

THE NATURE OF THE RELATIONSHIP BETWEEN INTELLIGENCE AND MENTAL DISORDER

We have shown that, in general, the severer the psychotic condition, the farther from the normal is the psychometric performance. Such a difference can be interpreted in two ways: (1) As demonstrating the effect of psychosis on cognitive function, or (2) As demonstrating the selective effect of intelligence on psychosis, *i.e.,* that certain types of psychoses appear at certain levels of intelligence rather than at others. (There is, of course, a third possibility, that neither is responsible, but that they are associated results of some other cause. In this instance, we believe the relationship can be explained without recourse to an unknown factor.)

Ordinarily the latter theory is put forward, not with respect to all psychoses, but rather to particular ones, *e.g.,* Tendler's conclusion that an initial low level conduces to neuroticism; Duncan's belief that feeblemindedness is an etiological factor in manic-depressive insanity; and the widely held opinion that paranoia attacks chiefly those of superior intellectual level. With the evidence supplied by Tendler and Duncan we have dealt at some length; we do not find it impressive.

The implications of this point of view have not been very carefully examined by its adherents. The fact of the existence of differences in intelligence between normal and abnormal groups does not in itself offer any clues as to the nature of this relationship; this must be inferred on other criteria and in accord with psychiatric as well as with psychologic evidence. Now, if it were the case that the level of pre-psychotic intelligence in the individual determined the nature of the psychosis to which he might be subject, then the generally accepted concept of a psychosis as primarily a disorder of the personality, particularly of its affective aspects, must be in error. For such a drastic revision of basic psychiatric theory there is no valid evidence. On the other hand, the interpretation of these differences as effects, in the cognitive field, of the disorder of the psychologic personality is in complete accord with psychiatric knowledge, and in no way opposed by the psychologic evidence.

The differences in mean test performances found by many experimenters (although not always in the same direction nor to the same extent) are not all of the evidence available. It is enlightening to compare the distributions. This comparison shows considerable overlapping of both ranges and standard deviations, even when the means differ significantly. This seems to us a potent argument against the interpretation that original level of intelligence may determine in any substantial part the type of psychosis.

These data together with the material presented earlier based on educational level seem reasonable evidence that there are very few, if any, disorders in which the type of psychosis developed is dependent to any extent on intellectual level.

Some further comment should be made about the commonly held position that paranoid conditions of one kind or another occur more frequently in the upper levels of intelligence. It is true that our paranoid condition and paranoid dementia praecox groups are well up generally as far as means go, but again the dispersal is extensive, and if this disease has originally attacked only the more intelligent then the deterioration in some of these cases must be much greater than the clinical picture would lead one to infer. (It is generally accepted that these types deteriorate rather slowly.) A pure paranoia rarely occurs, but the trend towards broad distribution appears in many of the other groups, in varying degrees. We suspect that the typical paranoid verbosity has been a confusing factor, and from the extent and press of verbal activity has been deduced a level of verbal intelligence, even of general intelligence, which is not actually present.

The Effect of Mental Disorder on Intelligence

In the presence of any psychotic or psychopathic process, certain changes in mental functioning may occur. These are in the direction of a lowering of the level of functioning and are both general and specific in nature. There is no doubt but that some part of this lowering may be attributed to difficulties in attention, and to what extent this basic function is affected we cannot say. It is clear, however, that it is not the only function that is affected.

Our analysis has shown that in the severely disordered mind, all types of intellectual activity are interfered with, some more and some less than others. Vocabulary is less affected in general than the other tests in all groups. Vocabulary expressed in terms of MA was higher than Stanford-Binet MA, and in many of the groups the difference was considerable; the difference was generally larger in the non-representative groups. To that extent, it is probably a better indicator of general level than is Stanford-Binet MA, but that it is not an adequate one is shown by the fact that in two groups it was far below the level of previous education.

One of our most striking results was the consistency with which the repetition of digits forwards was affected by psychosis. Of our 15 representative groups, 8 had means significantly and 1 a mean possibly significantly lower than the normal mean. The non-representative are generally lower than the representative. In general, the severer the clinical manifestations of the disorder the more marked the impairment in this test. We do not know how much of this disturbance is purely a memory disturbance and how much is due to disturbance of the span of attention. But that such a disturbance is present and to such an extent is a fact of importance in assessing test results in disordered groups. Repetition of digits backwards does not show so much effect. It is a task more closely related to general intellectual functioning than to simple rote memory.

As far as the type of items most affected is concerned, our analysis has shown that those primarily affected are of the conceptual thinking and immediate memory group, and that those least affected are old learning items.

Variability of performance appears to be greater in the psychotic than in the normal group, and this increase in variability is most apparent in the various dementia praecox groups.

The comparison of correlations between different tests for the normal and disordered did not bring out any. definite trends.

Although our material has clearly shown that disordered groups do not function as well intellectually as non-disordered groups we cannot speak of this change of function as "deterioration." As yet we know nothing about the irreversibility of this change. It should be noted that in the hebephrenic dementia praecox group, in whom, so far as is known, there is no organic change, the functional disturbance is even greater than it is in the general paresis group.

CHANGES IN THE VARIOUS DISORDERED GROUPS

Although the changes discussed above follow much the same pattern in all of the disordered groups, there are some differences between the various diagnoses. The findings for each group are therefore summed up here.

General Paresis

Next to the hebephrenics, the paretics are the most severely affected of any group studied, as shown in mean and item differences from the normal. The paretic's impairment is marked—he falls at about an 11 year level—and general, but in addition he shows particularly severe difficulty with immediate memory and conceptual thinking.

The paretic is much more profoundly disturbed in cognitive functioning than the psychotic alcoholic, and this disturbance is very nearly as extensive as that in the hebephrenic from which it does not differ in any meaningful way. But, profound as this disturbance is, it does not reduce the paretic to the level of the feebleminded, whether psychotic or not. In the latter comparison it is interesting to note that the paretics were consistently *relatively* better on old learned items, and the feebleminded on immediate memory and, to a lesser extent, on conceptual thinking.

The Alcoholics

Comparisons with normals, and comparisons among the three members of the group bring out few statistically significant differences, but show a consistent trend. The acute and non-psychotic chronic groups, although generally lower, differ comparatively little from the normal, and from each other on the test results; the psychotic chronic alcoholics tend to fall below the two others throughout and are well below the normal. It would seem that psychosis rather than alcoholism, even over long periods, is the factor affecting test performance, and, further, that it is not alcoholism, *per se,* which induces the psychosis.

Dementia Praecox

In comparison with the normal, what seems to stand out is the closeness of the catatonic, simple and paranoid groups (in that order) to the normal. Except for a few items on which significant differences are found, there is little to distinguish them from the normal. However, the unclassified and especially the hebephrenic distinguish themselves clearly from the normals, the latter, in fact, most of any of the groups studied. The unclassified with a mental level of about 125 months stands third in rank order of difference in items from the normals. These fall largely in the conceptual and associative thinking groups. In means, all but vocabulary are significantly lower. Hebephrenic dementia praecox, showing the greatest difference from normal, show it in all means and in all types of items. The average mental age level is somewhat below 11. Apparently psychosis has the most profound effect on this group.

A careful intercomparison of the various dementia praecox groups indicates that there is no justification for lumping all types into a total dementia praecox group, at least in psychometric research, since the differences among the types are in many instances greater than between the dementia praecoxes and other groups.

In general, the catatonics are the highest group, although the simple surpass them in means for digits forwards and backwards. The paranoid and simple are very close and not far below the catatonic, the hebephrenic and unclassified definitely inferior with the hebephrenic outstandingly low. Where many differences were found for any item it was usually the case the others surpassed the hebephrenics.

In comparisons made between the various types and other psychoses outstanding findings are: little difference between paranoid dementia praecox and paranoid condition, although the latter are closer to the normal; a striking similarity between the hebephrenic and paretic groups, sufficient to make the distinction of the psychometric picture all but impossible; and another striking similarity between the catatonic and manic-depressive, which makes these psychometrically indistinguishable.

Manic-Depressive

As was stated earlier, this is a heterogeneous group, comprising all types, but all of them examined during comparatively quiescent periods. The group is so like the normal in all test results—distribution, means, and items,—as to be indistinguishable in psychometric performance.

Psychopathic Personalities

These two groups are extraordinarily close in age, education and mean test results, and approximate the normal, although they fall somewhat below.

Paranoid Condition

This group falls quite close to the normal and psychometrically may be considered as essentially the same.

Psychoneuroses

The mean test results for this group are very close to normal, but the group tended to be somewhat higher than the normal on some individual items. We did not find our neurotics more variable than normals. In comparison with psychopathic personality without psychosis, the psychoneurotics are of higher level.

Without Psychosis[1]

Analysis of this group was of particular interest because of the frequent appearance in the literature of similar groups which have been used as normal controls. This group had the fourth largest number of significant differences from the normal in the item analysis. Mean test results were all markedly lower, the differences being significant for vocabulary and digits forwards and possibly so for Stanford-Binet score. The mental level of this group is 152 months. The item analysis showed the disturbance to be chiefly apparent in memory items, including vocabulary and to a much smaller degree in thinking items.

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[1] This large group comprises individuals who were sent to the hospital for examination and declared without psychosis (and, by inference, not feebleminded, not neurotic, and not psychopathic). This group includes most of the adult delinquents referred by the courts for examination to determine possible mental involvement. Causes for examination of the other cases varied; they may be summed up as involving conflict of a severe sort between the individual and the environment. The diagnosis of "Without Psychosis" implies that in the judgment of the psychiatric staff this conflict is not due to the presence in the subject of mental abnormality of a kind usually necessitating hospitalization.

27

A PSYCHODYNAMIC STUDY OF THE RECOVERY OF TWO SCHIZOPHRENIC CASES *

by

Thomas M. French, *Chicago,* and Jacob Kasanin, *San Francisco*

EVERY psychiatrist has had cases that seemed to be hopelessly involved in schizophrenic psychotic processes but which nevertheless, after some months or years, have set all his gloomy prognostications at naught, some even achieving on recovery a better social adjustment than had been possible before the illness. Sometimes these cases are dismissed as merely further evidence of the uncertainty of psychiatric diagnosis. Such cases, however, should challenge us to try to understand psychodynamically just what the process was by which the unexpected recovery took place or to answer if possible the paradoxical question of why it was necessary for these patients to develop a psychosis as a step in the process of achieving a better adaptation to life.

In this paper we wish to present two such cases who underwent no treatment other than the good physical care and sympathetic interest in the patient's communications which is offered in every good psychiatric hospital, but who nevertheless achieved unexpected recovery.

The points that we wish to illustrate are two: (1) that an acute psychosis may be a transitional episode in the process of emancipation from an old method of adjustment and 'learning' a new one, and (2) that during the acute psychosis the mechanism of recovery may be indicated in advance by the content of some of the delusions.

Our first patient is a young woman of twenty-four, a nurse, the youngest of eight children. The parents were Italians, originally Catholics who had been converted to the Protestant faith. The patient's father was somewhat of a rebel and left home early in life; he also left his church and became a converted Protestant. He graduated from a liberal university and after coming to America he became a successful publisher. The patient's mother was an able, intelligent, intuitive person. Four years previously she had had a depression which lasted about a month. The brothers and sisters had achieved success in business and professional careers, although several of them were somewhat neurotic.

The parents were in their fifties when the patient was born. A delicate child, she was considered pretuberculous when at the age of one and three she had swollen glands of the neck which suppurated and drained for several weeks; but with proper hygiene she developed into a healthy child.

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She was occasionally bothered with night terrors and sometimes talked in her sleep, but seemed otherwise quite normal. She was a very pretty child, enjoyed being dressed up, was fussy about her clothes, and was quite spoiled and pampered by her family. As a little girl she was very fond of dolls and loved to dress them.

She had a great admiration for her brother Joe, four years older, who was always interested in what she did, although he sometimes resented her wishing to play boys' games lest she become a tomboy.

She was well adjusted in school, was quite a leader and loved to play and take care of little children. She was a hard worker, had an excellent scholastic record and graduated from high school at eighteen. After this she went into training as a nurse and subsequently specialized in public health. In 1928 she had charge of a hygiene department in a large settlement house.

The patient was brought up in a very rigid family discipline. Some of her siblings left home because their lives were minutely regulated by the parents. The patient was never allowed to go out with boys until she was twenty-two. Even then she had to be in by ten o'clock, and the mother interviewed every man she met. The patient was given a choice of a career or marriage. In as much as she was interested in a career, the parents insisted that she have nothing to do with men.

The patient was described as a charming, sweet girl, sociable, attractive, quite aggressive and somewhat snobbish. She chose her friends very carefully. She was always extremely jealous of her brothers and sisters.

After a minor operation in 1922, there was a period in which the patient became more serious, less cheerful, and quite irritable. She began to demand a great deal of her family, was critical and scolded her mother for no special reason. In the winter of 1926 there was again a short period when the patient was extremely cross with her family, especially with her brother, Joe, of whom she was very fond. She seemed to be unhappy at home and extremely absent-minded, but gradually she seemed to pull out of it. A recurrence took place in the fall of 1927–1928.

In 1929 the patient felt so restricted at home that she decided to find a job in another city. She took charge of health work in a settlement house maintained by a sectarian organization. She found the people in the settlement house rigid, narrow and meddlesome. The patient's letters home showed that she was dissatisfied and unhappy. When she visited her sister in November 1929, the latter noticed that she was very quiet and unhappy.

In a later autobiographical account, however, the patient revealed that her unhappiness had a deeper cause. The difficulty had begun with an intimacy with her brother's friend, Tracy, who made urgent sexual advances to her. As she later confessed, she had refused intercourse with him only because she was menstruating, but had yielded to tongue kissing and probably to fellatio which was very disgusting to her. Then she developed cankers in her mouth, became disgusted by everything she ate, and was sure she had syphilis.

The patient went home for Christmas. She looked for a long time at her mother who met her at the station, as if she did not recognize her. She was confused, perplexed and could not make any decisions. She brought some ties for her brothers but could not decide whether they were good enough for the boys or not. She complained of fatigue, was depressed and spoke about being a failure. In spite of her family's objections the patient went back to work. However, she felt herself to be a total failure and 'could not go back and teach those dear children again.' Her letters to her family were brief and difficult to follow.

On January 12, 1930, the patient telephoned to her sister and asked that someone come to see her. When her brother visited her, she complained that everybody was talking about her and making sarcastic remarks. She thought of committing suicide by jumping out of the window, finally going so far as to climb onto the window sill with this thought. Earlier in the evening she had taken a dose of milk of magnesia and a sedative which had been given her, but a funny taste remained in her mouth and she was sure that her associates had attempted to poison her.

On January 16, 1930, the family received a wire from the superintendent of the settlement house, stating that the patient had become unmanageable and had tried to jump out of a window. The family came to take her home and on the way home the patient made several attempts to kill herself. She said that the police had tried to flirt with her and that she had been shut in a room with a policeman so that she would be compromised. When they tried to give her a sedative she said they were giving her poison. She had a small sore on her mouth which she asserted was syphilitic. She called on God and announced that she was a sinner. She also mentioned the name of her brother's friend and said she had been intimate with him.

On January 17 she was brought to a hospital for observation. On admission the patient was quiet but uncoöperative. Within a few hours she became very restless, walked a good deal, hammered at the door, cried for help and said that very strange things were happening. At times she was agitated and depressed. She called the physician again and again and said that she would be saved through Christ. For the first two days she refused all food. On the fourth day she became very quiet and under-active. She suspected that the food was poisoned and refused to drink water from the fountain. She said that strange, mysterious things had happened to her. She said that before she came to the hospital people bothered her and were against her. At the same time she was evasive and would not give any specific illustrations. She was hostile, she criticized the food and the hospital. She then lapsed into a stupor but any attempt to examine her physically elicited a violent response. Since the prognosis for quick recovery was thought to be poor, the patient was transferred to a State Hospital with the diagnosis, catatonic dementia præcox, stuporous state.

On admission to the State Hospital the patient was mute and untidy. She grimaced, gesticulated, and mumbled to herself unintelligibly. At times she was over-talkative. For a long time she wandered about the ward dirty, unresponsive, with a vacant, dull expression.

The following are excerpts from a later retrospective account of her illness.

> 'I went through what I thought was positive hell. I believed myself to have been dead many years. I thought I had been so wicked on earth that I was not allowed to live on it any more and that only the good people were allowed to enjoy its luxuries. It seemed like years and years instead of days and days. To be really dead was my only craving for I had no hope of ever enjoying the luxuries, if one might call them such, of my home again. If only I could have ended everything for myself. . . .
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> 'One of the patients reminded me so of Tracy's mother that I felt it was she. I thought she was there to attend the trial. She would look in my room all the time and hated the sight of me with a profound hatred, while in reality she was quite fond of me. His father, who I imagined Dr. P. to be, hated me likewise and was so severe—so different from what he really was. One of the student doctors was Tracy. Tracy had a lot of sympathy for me now but no love. He was chagrined and would not recognize me in this condition. I was a horrible girl and he a successful surgeon. . . .
>
> 'Soon after, perhaps a week (it seemed years) of agony I found myself on a boat bound for Italy. I had been kidnapped and what not. I was relieved of my suffering to a very small degree by being taken into another world. I must now suffer for my sinful life upon earth. Consequently I was being transformed into a snake. Hence the food, cornmeal mush with molasses (Indian pudding) and plenty of milk, for snakes thrive on milk. The very hairs of my head were each one changing separately into a snake. I myself was going to be a huge one. These thoughts sent shivers through me. It was horror again. No one can believe, no one can understand—for it was so real to me, so true to life. Anyone who looked at me long enough would take on a peculiar facial expression which I thought lasted; that was why people looked in and walked away and could not bear to see me. Why did I always hide? For fear someone who had known me would see me in this condition. I heard my friends' and relatives' voices. They all wanted me to return home. I could hear them pleading with me. . . .
>
> 'I was so dissatisfied with the life that I had led and the small amount of religion which I had possessed that I determined to become a Catholic. The

Catholic religion seemed to me to have more back of it (really I did not know a great deal about it). They had to confess their sins to the priest while we kept everything hidden within ourselves and lived our lives as we chose. Attending church was optional. What sort of religion was this, the Congregational faith? Merely effective, nothing more. Consequently I became (I sincerely believed) a Catholic. I spoke to the attendants about it and they were unusually sympathetic. I waited for a priest to come but apparently I was in no condition to be seen. So they put me in packs and I returned to hell once more where I remained for how long I do not remember. . . .

'The next thing I remember was being tube fed. I looked up into the doctor's face and she reminded me so much of a dear friend of mine that I felt she was there to help me. I wanted to talk to her but as I believed myself to have been dead I couldn't bring myself to do so. I wanted her back more than anything else. . . .

'Finally I felt that I had just awakened to the fact that I had been missing from my family for some months and that they were looking everywhere for me. A war had taken place on account of me, everything was wrong everywhere. My family must never find me. So I kept hiding. Consequently when my father came I did not want him near me. First because I had been dead. I was now Catholic and then too they were apt to look him up and molest him. I alone knew the extent of his goodness upon earth. He brought me ice cream. How absurd this seemed to me. To please him, however, I often ate it. . . .

'Was it possible that I was really L.A.B. at one time? How was I to know? There was no mirror around. I found scars on my legs which were there before and my hair seemed to be the same. The fact too that one or two people called me Lucia. These things alone seemed to prove my identity. . . .

'The hydro is like a morgue to me. I felt they were reviving people who were dead. . . .

'On my return from the hydro one particular day I was sitting in the sun parlor. The doctor that tube-fed me went by. When I smiled at her she responded by coming to talk to me. Because she said she would talk to me only if I wanted her to, I was willing to try. She asked me what I wanted most. I said "a chance to live again." When she said that I would have this opportunity, it seemed just the most remarkable thing imaginable. . . .'

In the spring of 1930 the patient showed more interest in her environment and began to be more communicative. 'When I first discovered that there were one or two people ready to be my friends, I immediately started to improve, but not until then.'

During this period she was continually working over the problem of her relations with Tracy, at times realistically.

'Another thing: Tracy always got awfully excited when he loved me. . . . He was one year younger than I was but he was old for his age. But I think he was in love with me. I think he likes me a lot but he has other girls. He never talked seriously of marriage. He told me I was the woman but I don't think he meant it. He did not know his own mind. He did many other things which were repulsive to me. I knew other girls did it. I don't like to think that he has done to other girls what he did to me. . . .

'I always loved my brother, Joe, even if I got awfully mad at him, sometimes. He didn't want me to do things with boys that he did with girls. He said a fellow can get away with it. A man doesn't want a girl that everyone had. The fact that I would do anything more than hold hands with a fellow was repulsive to Joe. I always knew that Joe and my family thought so highly of me that they could not think I went as far as I did. . . .

'The day you tube-fed me I would have been dead if you had not spoken to me. The others didn't. I knew I nearly died and I tried very hard to die. I think the idea of my favorite brother, Joe, kept me more alive than anything else, even more than my father and mother. . . .

'I thought when my case was read that I was at a trial. I thought the superintendent of the hospital was a judge and that the people could not get out of the hospital. They were being suffocated. The world had stopped. The minute any foreigner came around I thought I was in Italy. I thought I was in Italy when Francesca started raving at me in Italian.'

In the spring of 1930 the patient went home for a trial visit but she had to return to the hospital because she was very unstable, had severe temper tantrums and scolded her family. In the hospital the patient was extremely impulsive and several times attacked nurses and threw things at them. She continued to improve, however, and in the summer of 1930 she was discharged on parole. She was seen by the psychiatrist once or twice a week through the summer, fall and winter of 1930–1931. Throughout this period the patient was very anxious to come, never missed an appointment, was eager to talk about herself and constantly sought direction and guidance. She was like a small child who begged to be led.

During this period she met a young man who was her favorite brother's best friend. Gradually the two fell in love with each other. She would ask for detailed instructions to govern her conduct with this young man and when she was told she might conduct herself in any way she thought best, she would inform us immediately that that was exactly what she had been doing. When she asked, for example, if it were advisable for her to have relations with the man to whom she was engaged, as both felt very passionate, she was told that since they felt that way and since she was sure to marry the man, there were no real objections. Then the patient stated that she had already done it. It seemed as if she wanted her behavior condoned rather than permitted.

The young man whom she subsequently married was an unstable, somewhat immature person who had been married previously to an inferior person who left him with a feeble-minded child. His family was also very erratic, although wealthy and prominent socially. The patient thus had to contend with a very difficult situation which she handled with unusual intelligence and skill. She gradually won over to her side the members of her husband's family, gave extraordinarily good care to the feeble-minded child, and for several years took care of it until the husband of his own accord suggested that the child be placed in an institution.

Then the patient became pregnant and had a normal pregnancy and delivery. She and her husband had to weather many economic difficulties as the latter had a difficult time during the depression before he obtained a satisfactory position as an engineer. The patient, with whom we have kept in rather close touch, impresses one at present as a stable, mature, intelligent woman with a good deal of social poise, tact and judgment.

It will be noted that her psychosis followed the patient's first attempt at supporting herself away from home and was a reaction to a sexual experience which was at great variance with the moral traditions of the family. Significant also is the fact that even prior to the psychosis the patient was at least consciously and intellectually beginning to free herself from the overstrict standards of the mother. This is indicated by her insistence that she loved the man in spite of her disgust on account of the character of their sexual intimacies and also by her frank admission that a normal sexual relationship would have occurred had she not been menstruating at the time.

Her psychotic reaction makes it plain, however, that emotionally she was not so fully emancipated as her conscious attitudes would suggest. The central motive of her psychosis is punishment and at the height of her psychosis she experiences an acute estrangement from this newer self that had attempted to act in disregard of the puritanical attitudes of the parental home. She is dead, she is not herself. She is being transformed into a snake, a symbol of the sexuality which her conscience so loathes. People walk away and cannot bear to see her. She must hide from her family.

But then, under cover of these delusions of punishment and loathing, comes a first hint of a new trend. She is being kidnapped and carried back to the Catholic country from which her parents had come. The significance of this is not immediately plain until she tells us soon afterward that she has become a Catholic and extols the confession as a better means of dealing with guilt than trying 'to keep everything hidden in ourselves and living our lives as we choose.'

In the light of the specific facts of the patient's family history we can now sense that this delusion of being taken back to Italy has a hitherto unexpected meaning. The parents were converted Catholics and had the puritanical zeal of converts. The patient senses this and wishes to turn away from a religion that puts such a great burden upon the conscience, back to a religion that allows confession and absolution. She wishes to return not only to the land but also to the first faith of her parents.

We may perhaps even suspect a new meaning in her delusion of being transformed into a snake. Snakes thrive on milk, she tells us. The snake is not only a symbol of her sexuality but also of her desire to be fed.

We suspect that she desires not only physical but also spiritual food. She wishes for someone to teach her what to do with this problem of trying to reconcile her sexuality with the demands of conscience.

Thus in these little details of her delusions and then more plainly in her own account of her motives for wishing to become a Catholic, the patient has given us the clue to the secret of her recovery. From now on the need for someone to whom she may 'confess' her problems receives more and more overt expression and her recovery proceeds apace. During the same period a process of reality testing is setting in. She looks at the scars on her legs and wonders if she is really dead, if she may not be herself after all. After a time she brings herself to speak to her psychiatrist. She writes an account of her illness, upon which much of this history is based, and in this document is already beginning to turn over in her mind in a realistic way the problems presented by her sexual experience with Tracy. After returning home she continues to seek instruction from her psychiatrist. After a time she begins again to experiment with living according to the less rigid standards that correspond to her own intellectual convictions; but in this for a considerable period she still needs the moral support of her psychiatrist. Most significant and favorable for the stability of her recovery, however, is the fact that she seeks not so much permission in advance, as approval afterward for her steps toward emancipation.

It appears indeed that during the psychosis something happened in the patient's personality which eventuated in a healthier integration. Prior to her psychosis, under her mother's influence she had chosen a career instead of marriage. After her psychosis she married and adjusted successfully to a difficult marital situation. It looks as if her psychosis were an episode in the sexual experimentation, in this case considerably delayed, which normally occurs at puberty. After the psychosis is over she achieved a marital adjustment which would probably have been impossible before.

As one of us has pointed out in a previous paper, the process of 'learning' to substitute a new mode of adjustment for an older one often involves a period of frustration and despair due to the fact that one has abandoned the earlier form of gratification and has not yet found or become secure in the new one. 'Each step in learning involves the substitution of a new for an old method of obtaining gratification. The incentive to search for a new method of gratification must be derived from insight into the fact that the old method is no longer adequate. However, the realization that an old method of gratification is unsatisfactory does not lead to the immediate acquisition of a new one. It merely initiates a period of experimentation. The first experiments are apt not to be successful; consequently, the experimentation tends to be punctuated by periods of frustration and despair, for the experimenter has now lost his old method of gratification and has as yet found no new one to take its place.'

As we have just seen, the patient's psychosis can best be understood in terms of just such a learning process. The patient was the youngest of eight children, the 'baby' of the family, much spoiled and pampered. It was not easy for her to give up this position; but the rigid puritanical standards of her family made it even more than usually difficult for her to achieve any sort of frank and sensible attitude towards her sexual impulses without sacrificing her position in the family. Nevertheless, just prior to her psychosis she made her first steps towards her emancipation. She left home and accepted willingly for the first time the sexual advances of a man. Her psychosis broke out when she first fully sensed that this sort of sexual freedom must necessarily estrange her from her family and deprive her of her position as the favorite and youngest child. In her psychosis we can distinguish two main dynamic trends in relation to this 'learning' process. The patient first experienced the acute frustration, rage and guilt which arose from the realization of complete estrangement from her family and their standards; then gradually, step by step, there emerged the urge to continue the learning process, to renew her experiment this time with the moral support of the psychiatrist, to try again to live no longer according to standards imposed by her parents, but now according to her own intellectual convictions.

In the following case the solving of a problem is the central theme of the patient's psychosis.

The patient was a nineteen year old boy, a student, the fourth of seven children. The paternal grandmother and paternal aunt were patients in mental hospitals. The father was a quiet, intelligent, successful business man, the mother a very pleasant, motherly person, extremely fond of the boy. The family atmosphere was reported to be unusually warm and harmonious. The patient is said to have been very happy at home. There was an ordinary amount of teasing by his older brothers. The patient's physical development had been normal except for a high degree of myopia which necessitated his wearing glasses.

He was a very serious, earnest, overconscientious youngster who was regarded as an 'odd stick' within the family and was teased in school and at home because he had no interest in games but was much more interested in his studies at school. He graduated from high school at the head of his class. He played the flute in the orchestra and was an enthusiastic collector of stamps, arrowheads and coins. He was very fond of going to the woods and identifying birds; he occasionally stuffed birds. He was an active correspondent with people in foreign lands, worked on a boy's magazine and in search of stamps carried on an extensive correspondence with people all over the world. He was a sensitive, shy boy and always felt alone in a crowd. He had few friends and did not care to mix with people. He felt that there was a good deal of stupidity around him. He was very self-conscious and worried over the fact that he might make a fool of himself. On the other hand he was very stubborn and expected everybody to accept his ideas. When his ideas were made fun of he would withdraw into himself and shut up like a clam.

The patient disliked church and organized religion, but liked to pray by himself and was very much interested in the mystical and the occult. He was disgusted with the perfunctory way in which grace was said at camp. Some time before his illness he started a very extensive correspondence with a woman in Cyprus who wrote religious letters to him.

At the age of five there had been a good deal of mutual exhibitionism with other little boys and girls. He suffered from enuresis until the age of eleven and was punished for it. When he was about thirteen he was initiated into masturbation at a summer camp and worried a good deal in the succeeding years because he could not break himself of the habit. With one boy whom he knew for several years at summer camp, he went through as many varieties of sexual relations as they could think of. Until after his recovery from the psychosis there had never been any attempts at heterosexual intercourse.

After graduating from high school at the age of eighteen the patient entered college in the fall of 1923. The year was an arduous one. He had to commute a long distance and the course was difficult. There is some indication that his worries about masturbation increased at this time, for in January he began to keep a record of it and succeeded in reducing its frequency.

Toward the end of June he was quite upset, and one night he had a crying spell in his room. He said he was feeling discouraged and tired. In July he went to summer camp, apparently was fairly contented there, but on returning home for a few days he complained of difficulty with one of the boys at camp and talked very loudly and insistently and acted queerly. On July 29, two days after his return to camp, he stayed out all night in a canoe on the lake. He had read in some magazine that glasses were useless, so he threw them in the lake. As he was very nearsighted he was then unable to find his way; he also lost a paddle and had to wait until the canoe drifted to shore. He was sent home the next day with a counsellor. In the evening he kept drawing diagrams which he said contained the geometrical proof of a new great religion. He forecasted a great change to come at 11:20 P.M., and said that God's time was coming. He read the Bible and said he heard hymns being sung. When the time came and nothing happened, he accepted the situation and went to his room. He spent a good deal of time with a piece of quartz glass in which he saw an angel and a picture of the woman to whom he was writing in Cyprus. The next morning he took this piece of quartz glass and began to gaze at it again. He saw a girl, a mountain, and a landscape. He spoke of the girl with great joy. In the afternoon he became very restless and accused his father of poisoning his food.

He was sent to a hospital for observation. He was extremely distressed at being brought to the hospital, cried, screamed, and demanded his clothes and his release. He refused to eat some of the food because he said it had been poisoned and had drugs in it. He was very excited but alert, and commented on the various objects he saw. He maintained that he saw in a piece of quartz glass various objects he had not seen for years. He frequently called out a girl's name and conducted conversations with her.

Physical examination showed considerable undernourishment. The urine showed a faint trace of albumin, a few white cells, and occasional granular casts. The white blood cell count was 25,000. There was no fever or other significant finding. Within two weeks both urine and white blood count had become normal.

For several months the patient was very overactive, excited, restless and rebellious, but perfectly willing to talk about his illness. He clung tenaciously to his thoughts, and for months called out 'Lucy,' the name of the girl in Cyprus, with whom he conducted long conversations. He believed that she was in the hospital and perhaps on the same ward.

Reviewing his problems with his physician he brought up the fact that from the beginning he recognized that he was different from other boys and never felt at home in a crowd. At an early age he became interested in the Bible, its symbolism, and its conception of good and evil. This interest persisted through his college work where he became fascinated with formulæ: chemical, philosophic, religious and ethical. In the spring of 1924 he became interested in a memory system and became fired with the idea of finding a fundamental formula that would fit all spheres of life. He developed a very intricate, philosophical religious system which occupied all his attention and which was going to solve his problem of masturbation, his secret love affair, and his troubles at the camp. A few days before he came to the hospital he evolved a formula which, in his own opinion, relieved the tension in his mind, and more or less gave him the key to the universe which he was seeking. This was the idea that in the sexual union, man and woman came together and formed a perfect unity (the third element) thus reproducing the same formulation that he had found valid in all other spheres. This seemed the achievement of his goal and the solution of his problem. It is at this time that he became extremely detached from the rest of the world and began to receive telepathic communications from his sweetheart, a girl whom he had seen only once but with whom he corresponded extensively. The patient used a piece of quartz glass as a medium through which he might see explanations of things because it was the 'purest' substance known, and he felt that by the use of it he might be more able to achieve or at least glimpse perfection. It was while peering into this that he saw *five* pictures including an angel, the woman from Cyprus and others.

In the middle of November the patient became quieter and said that he no longer heard voices. He began to go home week-ends in December and was discharged on January 11, 1925. He reëntered college, taking up a technical course and graduated with honors. He finally obtained a position as a research worker in a large industry and became a very successful executive.

When seen in November 1931, he reported that his life had been quite uneventful since leaving the hospital. He had had several positions doing research work, his last position being very uninteresting but very secure.

With regard to his social relations, he stated that he had gradually become able to meet more people, that he had had several close friendships with girls with one of whom he had also had a sexual relationship. When last seen he was going with a girl whom he expected to marry soon.

Analyzing his illness, the patient said he could not reduce it to any one single factor. There were many things responsible for the breakdown, but at any rate it was a very valuable experience because it gave him a good insight into life. The overintellectualization of his adolescent years had been very harmful. He lived too much in thoughts, dreams and fantasy, without a real grasp or understanding of life. His recovery was largely influenced by the personal interest which his physician took in him.

With regard to the hallucinatory experiences, the patient states that they were the voices of various people, especially the girl he loved, which he heard in the noises of the street. He agreed with the psychiatrist that it was something like a tune which one hears in the noise of a moving train.

In this case we see a boy who from the beginning is impelled to concentrate the energy of his emotional conflicts in his intellectual functions. He is shy and feels alone in a crowd, does not get along well with other children but graduates from high school at the head of his class. He is worried about masturbation and tries to solve his problem alone by reading the Bible. Moreover his actual sexual attempts are of a distinctly investigatory nature. He tries many methods—a sort of research into the possibilities.

Due to the patient's extreme intellectualization of his conflict, it is difficult to get a complete picture of what is troubling him. In any case it is plain that he does not know what to do with his sexual impulses. He has been engaging in some sexual experimentation with another boy and now he is becoming increasingly worried about masturbation. Apparently his heterosexual impulses are still more disturbing to him for he chooses a girl at a distance, and in his psychosis dwells upon the purity of the medium through which he looks at her. One of the early acts of his psychosis—throwing away his glasses and losing his paddle while canoeing—seems to be a symbolic castration.

Thus it is plain that the patient wishes to get rid of his sexuality. His intellectual activity is a partly successful attempt at sublimation, a substitute for and a defense against the emergence of impure sexual impulses.

But this is not the only significance of his compulsive intellectual activity. Still more important is the attempt at intellectual mastery of his emotional conflicts. As the patient himself tells us, he is seeking for a formula to solve not only the problems of the universe but also the problem of masturbation and his secret love affair. The mechanism is one described by Anna Freud as characteristic of puberty—a displaced attempt to obtain intellectual mastery of one's own emotional conflicts by struggling to solve abstract philosophical problems.

In his psychosis he continues his attempts to master his emotional problems intellectually. The problem is to reconcile his sexual needs with the requirements of his conscience; but the conflict is too acute. The sexual urges are too intense to be quieted; the demands of conscience have become intensified as evidenced by his keeping a record of his masturbation and reducing its frequency. This results in that intense ambivalence towards seeing and knowing which is typical of the infantile sexual investigations. An irresistible fascination impels the child to look, but fear and horror impel him equally to turn away his eyes. Just so in our patient's psychosis, he throws away his glasses, he prefers not to see; but without eyes, he cannot find his way, his problem is insoluble. Symbolically he abandons the attempt to solve his own practical emotional problem, to 'paddle his own canoe.'

It would obviously be a mistake to conclude, however, that the urge to find a solution for his emotional problem has been quieted. On the contrary it forms the central motive power for the patient's psychosis. The patient has indeed turned his eyes away from his own practical emotional problem, the problem of what to do with his sexual impulses; but the need to see, to solve a problem, is still intense. It has only been displaced into the realm of abstract thought. Instead of seeking a practical solution for his own emotional problem he seeks now an intellectual formula that will not only solve his problem of masturbation and his secret love affair, but will give him a key to the universe as well.

Thus in this psychosis, as in the previous one, we can see a struggle between two main dynamic trends in relation to a 'learning' process. His irritation with the boy in camp, his delusions of being poisoned, his demanding, rebellious behavior in the hospital and most significant of all, throwing away his glasses and losing the paddle of his canoe, are evidences of the acute frustration to be expected whenever an older method of gratification proves inadequate, and one which will endure until a new instinctual outlet can be found to replace it. Even more conspicuous in this case, on the other hand, is the constructive impulse to solve the problem, an impulse whose significance is apt to be lost to us because it is partly displaced. The patient is trying to find in an intellectual formula a key to the problems of the universe instead of proceeding directly to the task of trying to find a way to reconcile his own conflicting impulses. Finally he does find an intellectual formula that satisfies him. The 'perfect unity' resulting from the sexual union between man and woman seems to him to be both the key to the universe and the solution for his own problem. His practical problem, however, is not yet solved and he continues restless and intellectually overactive for a period of some months.

Unfortunately we do not have the details of the process by which he returned to a more normal adjustment, but six or eight years later we learn that he has made a suitable adjustment in his work and apparently also in his sexual life. In his psychosis he had found relief in the thought that perfect unity resulting from the sexual union between man and woman was the key to the universe. It sounds as though this were a premonition of his later practical solution of his sexual problem in normal heterosexual relations.

It would seem therefore that this man's psychosis was again merely an episode in the task that confronts every boy at puberty, that of tearing himself away from the dependence of childhood and finding the solution for his sexual needs in a normal heterosexual relationship.

The point that distinguishes this patient's method of finding a solution from that of many other patients is the fact that this patient had to first solve his problem in the abstract before he was able to solve it concretely in his own case. This, however, is a mechanism for solving problems in everyday life and we as scientists should be least of all surprised by it as it is indeed the very mechanism that gives rise to science itself. It is often easier to solve a practical problem in two steps. In the first we attempt to solve our problem in general terms without too specific reference to the way in which we are practically and emotionally involved in it. It is this step that gives rise to scientific thought as well as to the less fruitful philosophical attempts to solve the problems of the universe. Once a general solution has been found, however, the next step must be to apply it concretely to the original practical problem.

When a patient becomes lost, as this one did for a time, in philosophical speculations, there is of course always the danger that he will not be able to find his way back to the practical solution of his own problem. This is why we are apt to look upon excessive intellectual speculation of the sort shown by this patient as a sign of hopeless psychotic involvement. In this case, however, the patient did find his way back, and his practical solution was in fact the very one indicated by his intellectual formula.

Upon the basis of our review of these two cases, we feel justified in formulating a few conclusions which are indeed not really new, but only old insights placed in a slightly different light.

(1) In attempting to estimate the probable outcome of a psychosis it is helpful to try to reconstruct the problem in adaptation which the psychosis is attempting to solve and then to estimate the possibilities for a successful solution in view of the actual life situation of the patient. Such an estimate is probably more important than the form of the psychosis as an index of prognosis.

The two patients described for example were involved in a problem of adaptation that is normal for puberty—that of tearing oneself away from the dependence of childhood and finding the solution for sexual needs in a normal heterosexual relationship. This is accomplished by a process of 'learning.'

(2) In relation to this process of adaptation or learning, it is possible and helpful to distinguish between two main dynamic trends:

(a) reactions to the acute frustration which results from the fact that an old method of gratification must be abandoned and that a new one has not yet been found;
(b) the constructive impulse to solve the problem of reconciling conflicting needs.

(3) It is easy to be too impressed with the destructive phenomena which are indeed apt to force themselves upon the attention of the psychiatrist because they are much more disturbing. In estimating these destructive tendencies it is important therefore to attempt to determine whether they represent the reaction to an acute but temporary frustration which will discharge itself, or whether they are giving rise to a vicious circle which leads to more and more frustration and thus makes recovery impossible.

(4) The constructive urge to find a solution is very apt to be overlooked because it is hidden behind the more conspicuous and disturbing destructive phenomena and may indeed find its expression in symbolism

which seems at first to have a highly regressive character. Our first patient's delusion of being transformed into a snake that 'thrives on milk' is an excellent example of just such a bizarre and disguised expression of what is really the patient's first constructive impulse toward recovery.

All this may be summed up in the two propositions with which we started: (1) that an acute psychosis may be a transitional episode in the process of emancipation from an old method of adjustment and 'learning' a new one, and (2) that the mechanism of recovery from such a psychosis may be indicated in advance during the acute psychosis by the content of some of the delusions.

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TRANSFERENCE PROBLEMS IN SCHIZOPHRENICS *

by

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MOST psychoanalytic authors maintain that schizophrenic patients cannot be treated psychoanalytically because they are too narcissistic to develop with the psychotherapist an interpersonal relationship that is sufficiently reliable and consistent for psychoanalytic work. Freud, Fenichel and other authors have recognized that a new technique of approaching patients psychoanalytically must be found if analysts are to work with psychotics. Among those who have worked successfully in recent years with schizophrenics, Sullivan, Hill, and Karl Menninger and his staff have made various modifications of their analytic approach.

In our work at the Chestnut Lodge Sanitarium we have found similar changes valuable. The technique we use with psychotics is different from our approach to psychoneurotics. This is not a result of the schizophrenic's inability to build up a consistent personal relationship with the therapist but due to his extremely intense and sensitive transference reactions.

Let us see first what the essence of the schizophrenic's transference reactions is and second how we try to meet these reactions.

In order to understand them we must state those parts of our hypothesis about the genesis of these illnesses that are significant for the development of the patient's personal relationships and thus for our therapeutic approach.

We think of a schizophrenic as a person who has had serious traumatic experiences in early infancy at a time when his ego and its ability to examine reality were not yet developed. These early traumatic experiences seem to furnish the psychological basis for the pathogenic influence of the frustrations of later years. At this early time the infant lives grandiosely in a narcissistic world of his own. His needs and desires seem to be taken care of by something vague and indefinite which he does not yet differentiate. As Ferenczi noted they are expressed by gestures and movements since speech is as yet undeveloped. Frequently the child's desires are fulfilled without any expression of them, a result that seems to him a product of his magical thinking.

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Traumatic experiences in this early period of life will damage a personality more seriously than those occurring in later childhood such as are found in the history of psychoneurotics. The infant's mind is more vulnerable the younger and less used it has been; further, the trauma is a blow to the infant's egocentricity. In addition early traumatic experience shortens the only period in life in which an individual ordinarily enjoys the most security, thus endangering the ability to store up as it were a reasonable supply of assurance and self-reliance for the individual's later struggle through life. Thus is such a child sensitized considerably more towards the frustrations of later life than by later traumatic experience. Hence many experiences in later life which would mean little to a 'healthy' person and not much to a psychoneurotic, mean a great deal of pain and suffering to the schizophrenic. His resistance against frustration is easily exhausted.

Once he reaches his limit of endurance, he escapes the unbearable reality of his present life by attempting to reëstablish the autistic, delusional world of the infant; but this is impossible because the content of his delusions and hallucinations are naturally colored by the experiences of his whole lifetime.

How do these developments influence the patient's attitude towards the analyst and the analyst's approach to him?

Due to the very early damage and the succeeding chain of frustrations which the schizophrenic undergoes before finally giving in to illness, he feels extremely suspicious and distrustful of everyone, particularly of the psychotherapist who approaches him with the intention of intruding into his isolated world and personal life. To him the physician's approach means the threat of being compelled to return to the frustrations of real life and to reveal his inadequacy to meet them, or—still worse—a repetition of the aggressive interference with his initial symptoms and peculiarities which he has encountered in his previous environment.

In spite of his narcissistic retreat, every schizophrenic has some dim notion of the unreality and loneliness of his substitute delusionary world. He longs for human contact and understanding, yet is afraid to admit it to himself or to his therapist for fear of further frustration.

That is why the patient may take weeks and months to test the therapist before being willing to accept him.

However once he has accepted him, his dependence on the therapist is greater and he is more sensitive about it than is the psychoneurotic because of the schizophrenic's deeply rooted insecurity; the narcissistic seemingly self-righteous attitude is but a defense.

Whenever the analyst fails the patient from reasons to be discussed later—one cannot at times avoid failing one's schizophrenic patients—it will be a severe disappointment and a repetition of the chain of frustrations the schizophrenic has previously endured.

To the primitive part of the schizophrenic's mind that does not discriminate between himself and the environment, it may mean the withdrawal of the impersonal supporting forces of his infancy. Severe anxiety will follow this vital deprivation.

In the light of his personal relationship with the analyst it means that the therapist seduced the patient to use him as a bridge over which he might possibly be led from the utter loneliness of his own world to reality and human warmth, only to have him discover that this bridge is not reliable. If so, he will respond helplessly with an outburst of hostility or with renewed withdrawal as may be seen most impressively in catatonic stupor.

One patient responded twice with a catatonic stupor when I had to change the hour of my appointment with her; both times it was immediately dispelled when I came to see her and explained the reasons for the change. This withdrawal during treatment is a way the schizophrenic has of showing resistance and is dynamically comparable to the various devices the psychoneurotic utilizes to show resistance.

The schizophrenic responds to alternations in the analyst's defections and understanding by corresponding stormy and dramatic changes from love to hatred, from willingness to leave his delusional world to resistance and renewed withdrawal.

As understandable as these changes are, they nevertheless may come quite as a surprise to the analyst who frequently has not observed their source. This is quite in contrast to his experience with psychoneurotics whose emotional reactions during an interview he can usually predict. These unpredictable changes seem to be the reason for the conception of the unreliability of the schizophrenic's transference reactions; yet they follow the same dynamic rules as the psychoneurotic's oscillations between positive and negative transference and resistance. *If the schizophrenic's reactions are more stormy and seemingly more unpredictable than those of the psychoneurotic, I believe it to be due to the inevitable errors in the analyst's approach to the schizophrenic, of which he himself may be unaware, rather than to the unreliability of the patient's emotional response.*

Why is it inevitable that the psychoanalyst disappoints his schizophrenic patients time and again?

The schizophrenic withdraws from painful reality and retires to what resembles the early speechless phase of development where consciousness is not yet crystallized. As the expression of his feelings is not hindered by the conventions he has eliminated, so his thinking, feeling, behavior and speech—when present—obey the working rules of the archaic unconscious. His thinking is magical and does not follow logical rules. It does not admit a *no,* and likewise no *yes;* there is no recognition of space and time. I, you, and they are interchangeable. Expression is by symbols; often by movements and gestures rather than by words.

As the schizophrenic is suspicious, he will distrust the words of his analyst. He will interpret them and incidental gestures and attitudes of the analyst according to his own delusional experience. The analyst may not even be aware of these involuntary manifestations of his attitudes; yet they mean much to the hypersensitive schizophrenic who uses them as a means of orienting himself to the therapist's personality and intentions towards him.

In other words, the schizophrenic patient and the therapist are people living in different worlds and on different levels of personal development with different means of expressing and of orienting themselves. We know little about the language of the unconscious of the schizophrenic, and our access to it is blocked by the very process of our own adjustment to a world the schizophrenic has relinquished. So we should not be surprised that errors and misunderstandings occur when we undertake to communicate and strive for a rapport with him.

Another source of the schizophrenic's disappointment arises from the following: since the analyst accepts and does not interfere with the behavior of the schizophrenic, his attitude may lead the patient to expect that the analyst will assist in carrying out all the patient's wishes, even though they may not seem to be to his interest, or to the analyst's and the hospital's in their relationship to society. This attitude of acceptance so different from the patient's previous experiences readily fosters the anticipation that the analyst will try to carry out the patient's suggestions and take his part, even against conventional society should occasion arise. Frequently it will be wise for the analyst to agree with the patient's wish to remain unbathed and untidy until he is ready to talk about the reasons for his behavior or to change spontaneously. At other times he will unfortunately be unable to take the patient's part without being able to make the patient understand and accept the reasons for the analyst's position.

For example, I took a catatonic patient who asked for a change of scene, one day for lunch to a country inn, another time to a concert, and a third time to an art gallery. After that he asked me to permit him with a nurse to visit his parents in another city. I told him I would have to talk this over with the superintendent and in addition suggested notifying his people. Immediately he became furious and combative because this meant that I was betraying him by consulting with others about what he regarded as a purely personal matter. From his own detached and childlike viewpoint he was right. He had given up his isolation in exchange for my personal interest in him, but he was not yet ready to have other persons admitted to this intimate relationship.

If the analyst is not able to accept the possibility of misunderstanding the reactions of his schizophrenic patient and in turn of being misunderstood by him, it may shake his security with his patient.

The schizophrenic, once he accepts the analyst and wants to rely upon him, will sense the analyst's insecurity. Being helpless and insecure himself—in spite of his pretended grandiose isolation—he will feel utterly defeated by the insecurity of his would-be helper. Such disappointment may furnish reasons for outbursts of hatred and rage that are comparable to the negative transference reactions of psychoneurotics, yet more intense than these since they are not limited by the restrictions of the actual world.

These outbursts are accompanied by anxiety, feelings of guilt, and fear of retaliation which in turn lead to increased hostility. Thus is established a vicious circle: we disappoint the patient; he hates us, is afraid we hate him for his hatred and therefore continues to hate us. If in addition he senses that the analyst is afraid of his aggressiveness, it confirms his fear that he is actually considered to be dangerous and unacceptable, and this augments his hatred.

This establishes that *the schizophrenic is capable of developing strong relationships of love and hatred towards his analyst.*

'After all, one could not be so hostile if it were not for the background of a very close relationship,' said one catatonic patient after emerging from an acutely disturbed and combative episode.

In addition, I believe *the schizophrenic develops transference reactions in the narrower sense* which he can differentiate from the actual interpersonal relationship.

A catatonic artist stated the difference between the two kinds of relations while he was still delusional and confused when he said pointing to himself, 'There is the artist, the designer and the drawer,' then looking around my office at the desk and finally at me, 'the scientist, the research worker, the psychiatrist. . . . As to these two my fears of changes between treatment and injury do not hold true. Yet, there is also something else between us—and there is fear of injury and treatment—treatment and injury.' Then he implored me: 'Understand! Try to be psychic —that will constitute real communism between us' (here using a political symbol to indicate a personal bond).

Another instructive example was given by an unwanted and neglected middle child of a frigid mother. He fought all his life for the recognition denied him by his family. Ambitious, he had a successful career as a researcher. During the war he was called to a prominent research center some distance from his home. Ten years later, after several frustrating repetitions of his childhood conflicts, he became sick.

The first eighteen months of his analysis were spent in a continuous barrage of hatred and resentment. He would shout: 'You dirty little stinking bitch,' or 'You damned German Jew; go back to your Kaiser!' or, 'I wish you had crashed in that plane you took!' He threatened to throw all manner of things at me. These stormy outbursts could be heard all over the hospital.

After a year and a half he became less disturbed and began to be on friendly terms with me, accepting willingly some interpretations and suggestions. Asked about his hatred of me, he said, 'Oh, I think I did not actually hate you; underneath I always liked you. But when I had that call to the Institute—do you remember?—I saw what the Germans had done to our men and I hated you as a German for that. Besides, mother, far from being proud of me as you would have expected, hated me for going instead of staying home and supporting her pet, my younger brother. You were mother, and I hated you for that. My sister, although living near the Institute, did not even once come to see me although she had promised to. So you became sister, and I hated you for that. Can you blame me?'

From these examples can one doubt that the schizophrenic demonstrates workable transference reactions?

As the usual psychoanalytic approach is effective only with psychoneurotics, what modifications are necessary in our current technique in order to meet the particular needs of schizophrenics?

Contact with the schizophrenic must begin with a long preparatory period of daily interviews (as in psychoanalysis with children) during which the patient is given the opportunity of becoming acquainted with the analyst, of finding out if the analyst can be of value to him, and of overcoming his suspicion and his anxiety about the friendship and consideration offered to him by the analyst. After that the patient may gain confidence in his physician and at last accept him.

One patient shouted at me every morning for six weeks, 'I am not sick; I don't need any doctor; it's none of your damned business.' At the beginning of the seventh week the patient offered me a dirty crumpled cigarette. I took it and smoked it. The next day he had prepared a seat for me by covering a bench in the yard where I met him with a clean sheet of paper. 'I don't want you to soil your dress,' he commented. This marked the beginning of his acceptance of me as a friend and therapist.

Another very suspicious patient after two days of fear and confusion ushering in a real panic became stuporous for a month—mute, resistive to food and retaining excretions. In spite of this rather unpromising picture, I sat with him for an hour every day. The only sign of contact he gave to me or anyone was to indicate by gestures that he wanted me to stay; all that he said on two different days during this period was: 'Don't leave!'

One morning after this I found him sitting naked and masturbating on the floor of his room which was spotted with urine and sputum, talking for the first time yet so softly that I could not understand him. I stepped closer to him but still could not hear him so I sat down on the floor close to him upon which he turned to me with genuine concern: 'You can't do that for me, you too will get involved.' After that he pulled a blanket around himself saying, 'even though I have sunk as low as an animal, I still know how to behave in the presence of a lady.' Then he talked for several hours about his history and his problems.

Finally I offered him a glass of milk. He accepted the offer and I went to get it. When I came back after a few moments his friendliness had changed to hostility and he threw the milk on me. Immediately he became distressed: 'How could I do that to you?' he asked in despair. It seemed as though the few minutes I was out of the room were sufficient time for him to feel that I had abandoned him.

His confidence was regained by my showing that I did not mind the incident. And for eight months of daily interviews he continued to talk. Unfortunately he was then removed from the sanitarium by his relatives.

This also serves to illustrate the difference between the schizophrenic's attitude towards time, and ours. One patient, after I told him I had to leave for a week, expressed it thus: 'Do you know what you are telling me? It may mean a minute and it may mean a month. It may mean nothing; but it may also mean eternity to me.'

Such statements reveal that there is no way to estimate what time means to the patient; hence the inadvisability of trying to judge progress by our standards. These patients simply cannot be hurried and it is worse than futile to try. This holds true in all stages of treatment.

This was brought home to me by a catatonic patient who said at the end of five months of what seemed to me an extremely slow movement in the direction of health: 'I ought to tell you that things are going better now; but'—with anxiety in his voice—'everything is moving too rapidly. That ought to make us somewhat sceptical.'

As the treatment continues, the patient is neither asked to lie down nor to give free associations; both requests make no sense to him. He should feel free to sit, lie on the floor, walk around, use any available chair, lie or sit on the couch. Nothing matters except that the analyst permit the patient to feel comfortable and secure enough to give up his defensive narcissistic isolation, and to use the physician for resuming contact with the world.

If the patient feels that an hour of mutual friendly silence serves his purpose, he is welcome to remain silent: 'The happiness to dare to breathe and vegetate and just to be, in the presence of another person who does not interfere,' as one of them described it.

The only danger of these friendly silent hours is that the patient may develop more tension in his relationship with the analyst than the patient can stand, thereby arousing great anxiety. It belongs among the analyst's 'artistic' functions, as Hill has called them, to sense the time when he should break his patient's friendly silence.

What are the analyst's further functions in therapeutic interviews with the schizophrenic? As Sullivan has stated, he should observe and evaluate all of the patient's words, gestures, changes of attitudes and countenance, as he does the associations of psychoneurotics. Every single production—whether understood by the analyst or not—is important and makes sense to the patient. Hence the analyst should try to understand, and let the patient feel that he tries. He should as a rule not attempt to prove his understanding by giving interpretations because the schizophrenic himself understands the unconscious meaning of his productions better than anyone else.[1] Nor should the analyst ask questions when he does not understand, for he cannot know what trend of thought, far off dream or hallucination he may be interrupting. He gives evidence of understanding, *whenever he does,* by responding cautiously with gestures or actions appropriate to the patient's communication; for example by lighting his cigarette from the patient's cigarette instead of using a match when the patient seems to indicate a wish for closeness and friendship.

'Sometimes little things like a small black ring can do the job,' a young catatonic commended after I had substituted a black onyx ring for a silver bracelet I had been wearing. The latter had represented to him part of a dangerous armour of which he was afraid.

What has been said against intruding into the schizophrenic's inner world with superfluous interpretations also holds true for untimely suggestions. Most of them do not mean the same thing to the schizophrenic that they do to the analyst. The schizophrenic who feels comfortable with his analyst will ask for suggestions when he is ready to receive them. So long as he does not, the analyst does better to listen. The following incident will serve as an illustration. A catatonic patient refused to see me. I had disappointed him by responding to his request that someone should spend the whole day with him by promising to make arrangements for a nurse to do so instead of understanding that it was I whom he wanted. For the following three months he threatened me with physical attack when I came to see him daily, and I could talk with him only through the closed door of his room.

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[1] Laforgue attributes the cure of a case of schizophrenia to his interpretative work with the patient. According to my experience I believe it was due to his sensitive emotional approach and not the result of his interpretations.

Finally he reaccepted me and at the end of a two-and-a-half hour interview stated very seriously: 'If only you can handle this quite casually and be friendly and leave the young people [the nurses] out of it, I may be able to work things out with you.' The next day in the middle of another hour of confused hallucinatory talking, he went on: 'This is a great surprise to us. There were lots of errors and misunderstandings between us and we both learned quite a bit. If you could arrange for me to see my friends and to spend more time on an open ward, and if you remain casual we might be able to coöperate.' It is scarcely necessary to say that we acted in accordance with his suggestions.

In contrast to fortunate experiences like these there will remain long stretches on every schizophrenic's lonely road over which the analyst cannot accompany him. Let me repeat that this alone is no reason for being discouraged. *It is certainly not an intellectual comprehension of the schizophrenic but the sympathetic understanding and skilful handling of the patient's and physician's mutual relationship that are the decisive therapeutic factors.*

The schizophrenic's emotional reactions towards the analyst have to be met with extreme care and caution. The love which the sensitive schizophrenic feels as he first emerges, and his cautious acceptance of the analyst's warmth of interest are really most delicate and tender things. If the analyst deals unadroitly with the transference reactions of a psychoneurotic it is bad enough, though as a rule not irreparable; but if he fails with a schizophrenic in meeting positive feeling by pointing it out for instance before the patient indicates that he is ready to discuss it, he may easily freeze to death what has just begun to grow and so destroy any further possibility of therapy.

Here one has to steer between Scylla and Charybdis. If the analyst allows the patient's feelings to grow too strong without providing the relief of talking about them, the patient may become frightened at this new experience and then dangerously hostile toward the analyst.

The patient's hostility should ideally be met without fear and without counterhostility. The form it sometimes takes may make this difficult to do. Let it be remembered however, that the less fear patients sense in the therapist the less dangerous they are.

One patient explained this to me during the interviews we had in her post-psychotic stage recovery. 'You remember,' she said, 'when you once came to see me and I was in a wet pack and asked you to take me out? You went for a nurse and I felt very resentful because that meant to me that you were afraid to do it yourself and that you actually believed that I was a dangerous person. Somehow you felt that, came back and did it yourself. That did away with my resentment and hostility toward you at once, and from then on I felt I could get well with you because if you were not afraid of me that meant that I was not too dangerous and bad to come back into the real world you represented.'

Sometimes the therapist's frank statement that he wants to be the patient's friend but that he is going to protect himself should he be assaulted, may help in coping with the patient's combativeness and relieve the patient's fear of his own aggression.

Some analysts may feel that the atmosphere of complete acceptance and of strict avoidance of any arbitrary denials which we recommend as a basic rule for the treatment of schizophrenics, may not accord with our wish to guide them towards reacceptance of reality. We do not believe that is so.

Certain groups of psychoneurotics have to learn by the immediate experience of analytic treatment how to accept the denials life has in store for each of us. *The schizophrenic has above all to be cured of the wounds and frustrations of his life before we can expect him to recover.*

Other analysts may feel that treatment as we have outlined it is not psychoanalysis. The patient is not instructed to lie on a couch, he is not asked to give free associations (although frequently he does), and his productions are seldom interpreted other than by understanding acceptance.

Freud says that every science and therapy which accepts his teachings about the unconscious, about transference and resistance and about infantile sexuality, may be called psychoanalysis. According to this definition we believe we are practising psychoanalysis with our schizophrenic patients.

Whether we call it analysis or not, it is clear that successful treatment does not depend on technical rules of any special psychiatric school but rather on the basic attitude of the individual therapist toward psychotic persons. If he meets them as strange creatures of another world whose productions are nonunderstandable to 'normal' beings, he cannot treat them. If he realizes however, that the difference between himself and the psychotic is only one of degree and not of kind, he will know better how to meet him. He will be able to identify himself sufficiently with the patient to understand and accept his emotional reactions without becoming involved in them.

SUMMARY

Schizophrenics are capable of developing workable relationships and transference reactions.

Successful psychotherapy with schizophrenics depends upon whether the analyst understands the significance of these transference phenomena and meets them appropriately.

29

THE RELATION OF PERSECUTORY DELUSIONS TO THE FUNCTIONING OF THE GASTRO-INTESTINAL TRACT *

by

Franz Alexander, M.D., and William C. Menninger, M.D.

I. Parallelism between the Psychodynamic Background of Psychogenic Chronic Constipation and Persecutory Delusions

An attitude, characterized by pessimism, the belief that one is not loved, that one receives nothing from others, the fear of not being able to earn a living, has been described by Alexander as characteristic of many cases suffering from psychogenic chronic constipation. These character trends coincide with features described earlier by Abraham as belonging to the "anal character." The same pessimistic defeatist attitude in an exaggerated form is common in melancholias and becomes most pronounced in the delusions of poverty. In constipation cases, together with this mistrustful attitude, there is also the tendency to deny all obligations toward the environment, to refuse, for example, to make efforts for other people's sake, or to give help or money. These two features, first the mistrustful pessimistic attitude, which is characteristic both of melancholias and of cases suffering from chronic constipation, and second the tendency to repudiate obligations, corresponds schematically to the following emotional syllogism: "I do not receive anything from others, and therefore I do not need to give; indeed I have to cling to what I possess." This emotional attitude seems to be in causal connection with the tendency to retain the intestinal content and explains the frequency of constipation in depressive states. The connection lies in the unconscious evaluation of the intestinal content as a valuable possession, in the coprophilic tendency of the child before and during the period of training to cleanliness.

During the study of psychogenic factors involved in gastro-intestinal disturbances in the Chicago Institute for Psychoanalysis, it was noted by several members of the staff that in some cases suffering from chronic constipation, marked paranoid tendencies were frequent. These patients go further in their misinterpretation of the environment's attitude than do the depressed cases; whereas these latter are contented to believe that nobody loves them, that nobody gives them anything of value, these para-

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noid cases maintain not only that what people give them is of no value, but that on the contrary it is harmful—an attitude that is most clearly expressed in the delusion that their food is poisoned. According to these clinical findings, we began to distinguish between two types of constipation cases, those exhibiting more the features of melancholia, and those who show more paranoid trends. The above described causal connection of the constipation with the emotional trends typical for melancholia, was rather obvious: the fear of not receiving increases the possessive-retentive tendencies of these patients, which they also extend toward the intestinal content. The question arose, whether the frequent paranoid tendencies in certain types of constipation may have also a causal psychodynamic relationship to intestinal retention. This seemed probable because of certain psychological findings obtained during the analysis of cases suffering from chronic constipation. In the dreams of these patients, and in their fantasy life, the idea of soiling or attacking people with filthy epithets or even with excrements is frequently quite frankly expressed, and their dream symbolism also quite regularly refers to all kinds of attacking and soiling others by means of excrements. These frequent coincidences of intense unconscious and even conscious anal sadistic impulses with chronic constipation led us to assume that these three tendencies, (1) the tendency to retain the intestinal contents, (2) the anal sadistic impulses, and (3) the paranoid tendencies, are all somehow psychodynamically connected with each other. The obvious explanation was that the excremental act in these cases is connected unconsciously with hostile attacking tendencies which causes fear of retaliation, denial of, and finally projection of the hostile tendencies, and at the same time an inhibition of the excremental functions.

The psychological background of this inhibition differs from the syllogism just mentioned as characteristic of the depressed constipated cases; it is based on a negative depreciating attitude toward the excrements and on an anal sadistic concept of the excremental act. The above described tendency to retain the excrements on the basis of their positive evaluation as a precious possession corresponds to the earlier coprophilic phase of childhood development; the inhibition of the excretory function caused by the negative sadistic evaluation of the excremental act as a means of attacking others, corresponds to the latter phase in which the child already has developed a disgust reaction as a result of his training. However, both sources of intestinal retention, one based on the coprophilic tendency, the other on the inhibition of anal sadistic impulses, are found together in the unconscious in all cases. Sometimes the one, sometimes the other motivation is more prevalent; the depressed cases retain their intestinal content more out of possessive tendency, the paranoid cases more out of inhibition of the sadistically evaluated excretory act.

These considerations explain the coincidence of inhibited anal sadistic impulses with constipation and it remains now to understand the connection between paranoid delusions and constipation and anal sadistic impulses.

That the denial and projection of anal sadistic impulses play an important role in the psychogenesis of persecutory delusions is well established through psychoanalytic experience. Ophuijsen and Stärcke have pointed out that in persecutory ideas, the unconscious identifies the intestinal content as the attacker. In paranoid psychoses there are frequent ideas of being poisoned by gas, or of food being poisoned or mixed with disgusting things. These fantasies are obviously based on the projection of the patient's own anal soiling tendencies. The projection of the anal sadistic impulses allows the patient to put the blame on the environment, to assume a negativistic, even aggressive attitude, and at the same time to deny his own original destructive tendencies. He can interpret these as reactions to the hostility of the environment against himself. It is also obvious that if in their unconscious they consider the excremental act as an attack and if at the same time they wish to deny their own aggressions, this probably will have an inhibitory influence on the excretory process itself. Therefore we expected that the tendency to constipation would probably as a rule be frequent among patients suffering from persecutory delusions. Even though our few analyzed cases of chronic constipation did not have real persecutory delusions, their general attitude toward their environment was somewhat paranoid. They had a tendency to blame the environment and deny their own aggressions, but at the same time, in their dreams, they expressed their anal sadistic-soiling tendencies with great clarity. Of course, in their conscious life, only traces of the paranoid trends were present and these were corrected by the patient's unimpaired judgment, just as the depressed types of chronic constipation cases exhibit the emotional attitude of melancholias only in a diminished form.

These psychodynamic observations have induced us to subject their general validity to a statistical study of the excremental habits of a larger number of frankly paranoid cases. This study was especially challenging since it meant a conclusive test of the correctness of our psychodynamic conclusions based upon the analysis of a relatively small number of cases. We approached the problem by selecting a hundred psychotic patients suffering from persecutory delusions, investigating their gastro-intestinal habits and then comparing them with cases of schizophrenics in which the described type of delusions were not present. A special comparative statistical study of forty cases of manic depressive patients was also made because the retardation of intestinal elimination is well established in this type of psychosis.

II. STATISTICAL FINDINGS

Two hundred forty cases have been investigated and classified symptomatically into three groups, one hundred showing active persecutory trends or delusions at the time of the examination, forty cases showing depression without showing paranoid coloring and one hundred cases showing neither ideas of persecution nor depression—the latter group being used as controls for the first two. We are indebted to Dr. Charles F. Read, Managing Officer of the Elgin State Hospital, for the privilege of studying these cases at this institution. We recognize that certain dietetic factors common to all large institutions are operative in these cases, but these factors are uniform in all the groups. It is to be expected that a certain number of persons would complain against institutional food and that mental hospital residency in many instances necessitates considerable confinement as compared with the previous habits of the individual.

Material.—We wish to emphasize that we are not classifying our cases according to diagnostic categories but on the basis of the psychological content of their symptoms. The great majority of the hundred cases showing persecutory trends were diagnosed by the hospital staff as paranoid schizophrenia. There are, however, a few cases in this group suffering from paranoid delusions who were diagnosed differently, and on the other hand many of the cases diagnosed as paranoid schizophrenia on admission, but who did not show paranoid trends at the time of the examination, were consequently not included in this group but in the control group. The great advantage of this classification is that our results are conclusive regarding the question of how frequently persecutory delusions and constipation coincide independent of other diagnostic criteria. Our control group consists of a heterogeneous group of schizophrenic patients without persecutory delusions. Our statistical study on depressed cases included for the most part typical manic depressive psychoses in the depressed phase, although a few of the cases had been diagnosed differently, the depression being in all cases, however, the predominant symptom. None of these patients has been in the hospital more than five years.

The depressed cases have been included in our investigation mainly for comparative reasons because their tendency to be constipated is a well established fact.

Method.—An abstract was made in each case from the original case record as given on admission. Each patient was interviewed for the purpose of making a short mental examination and specific inquiry was made regarding the eating habits, their opinion regarding the food, indigestion, bowel habits, the use of laxatives and the occurrence of diarrhea. Patients were excluded when in the opinion of the examiner the statements were unreliable, except in those instances where the facts could be verified by the physician in charge of the ward, or, more frequently, by the attendant.

Results.—The following tables indicate the tabulation of three groups into three classes divided on the basis of the severity of the constipation. A more detailed study of each group is presented below, also criteria for the classification of the degree of the intestinal stasis.

Persecutory Delusions

	FEMALE	MALE	TOTAL	PER CENT	
No constipation	13	15	28	28	
Mild constipation	12	2	14	14	72%
Severe constipation	18	40	58	58	
			100	100	

Depressed

	FEMALE	MALE	TOTAL	PER CENT	
No constipation	7	2	9	22.5	
Mild constipation	3	1	4	10	77.5%
Severe constipation	20	7	27	67.5	
			40	100	

Controls
(Not Paranoid—Not Depressed)

	FEMALE	MALE	TOTAL	PER CENT	
No constipation	22	52	74	74	
Mild constipation	5	9	14	14	26%
Severe constipation	5	7	12	12	
			100	100	

It is conspicuous in these tables that the paranoid group shows 72 per cent of the individuals with either mild or severe constipation, the depressed group shows 77.5 per cent, in contrast to the control group which shows only 26 per cent with constipation. The findings are even more conclusive if we include only those cases showing severe constipation. The paranoid group shows 58 per cent, the depressed group 67.5 per cent and the control group only 12 per cent.

Closer analysis of the groups specifying the degree of constipation is made in the following three tables. It will be noted that the degree of constipation is for convenience classified into twelve groups, the first three of which we are listing as "no constipation," the second three as "mild constipation" and the other six as "severe constipation." We recognize fully that "constipation" is a vague term in view of the fact that certain individuals can hardly be said to be constipated if their normal evacuations occur every two or three days, whereas a similar state of affairs for

Paranoid Delusions of Persecution

	NUMBER OF CASES	PER CENT
No constipation		
1. Two or more movements daily	5	
2. One movement daily	17	
3. Daily movement with special aids (much water, no meats, etc.)	6	28
Mild constipation		
4. Daily movement with periodic constipation (periodic laxatives)	6	
5. Movement once every one or two days	4	
6. Movement once every one or two days with periodic constipation	4	14
Severe constipation		
7. Once in two days	7	
8. Once in two or three days	13	
9. Once in three days	4	
10. Once in three or four days	7	
11. Once every four days or more	13	
12. Only with laxative or enema	14	58
	100	100

Depressions

	NUMBER OF CASES	PER CENT
No constipation		
1. Two or more movements daily	1	
2. One movement daily	8	
3. Daily movement with special aids (much water, no meats, etc.)	0	
	9	22.5
Mild constipation		
4. Daily movement with periodic constipation (periodic laxatives)	1	
5. Movement once every one or two days	3	
6. Movement once every one or two days with periodic constipation	0	
	4	10
Severe constipation		
7. Movement once in two days	5	
8. Movement once in two or three days	10	
9. Movement once in three days	2	
10. Movement once in three or four days	6	
11. Movement every four days or more	4	
12. Movement only with laxative or enema	0	
	27	67.5
	40	100

Controls

	NUMBER OF CASES	PER CENT
No constipation		
1. Two or more movements daily	18	
2. One movement daily	52	
3. Daily movement with special aids (much water, no meats, etc.)	4	74
Mild constipation		
4. Daily with periodic constipation	5	
5. One movement every one or two days	6	
6. One movement every one or two days with periodic constipation	3	14
Severe constipation		
7. Movement once in two days	0	
8. Movement once in two or three days	1	
9. Movement once in three days	1	
10. Movement once in three or four days	2	
11. Movement every four days or more	4	
12. Movement only with laxative or enema	4	12
	100	100

another individual is evidence of marked constipation. Similarly, we recognize that an individual may have several bowel movements a day and yet his actual peristaltic activity may be so slow that the intestinal content requires five or six days for complete passage through the tract. The frequency of evacuation is not an ideal criterion for judging peristaltic activity; for this purpose barium meal and x-ray examination is the only suitable method. This method has been employed in the work by Kaiser and Henry which we shall discuss later. Our interest, however, was not so much in the relation of persecutory ideas to the peristaltic activity in general as in their relation to the excremental functions in particular which latter are dependent both upon the peristaltic and sphincter activity.

III. Previous Studies on Intestinal Stasis in Psychosis

The association of intestinal stasis with various types of psychoses and particularly with depressions, has long been recognized and in fact is the basis for the very extensive usage of colonic irrigation in the treatment of these illnesses.

Believing that the constipation was due to a local infectious process, Cotton originally recommended in many cases the removal of the colon but along with many other therapists used high hot colonic irrigations extensively. These therapeutic experiments have been based on the obviously erroneous concept that the psychosis was caused by the disfunction of the intestinal tract in contrast to our assumptions that the intestinal stasis is conditioned psychodynamically through some psychological process such as the psychosis. The relationship between depression and constipation was suggested by Abraham, namely, that the retardation of visceral functions is a physiological expression of the tendency to retain within the self the orally incorporated love objects.

Although there are many reports of colonic therapy in mental disease, we have found only two recorded studies of the actual peristaltic activity as shown by roentgen ray examination after a barium meal. Kaiser examined the actual peristaltic activity by roentgen ray after barium meal in 37 cases of schizophrenia, 21 cases of manic depressive psychosis and 12 cases of psychoneuroses. He found that the normal evacuation time of the colon was from 36 to 48 hours, in contrast to the 37 cases of schizophrenia which showed an average of 113 hours and to the manic depressive group which averaged 154 hours. Henry of Bloomingdale Hospital, New York, three years previously had reported his roentgen ray observations of 51 cases of schizophrenia. In this group he found a normal function in chronic deteriorated cases, but 70 per cent of the acute, actively hallucinating cases showed a retention of the barium in the colon for a period longer than five days. Sixty-seven per cent of 12 paranoid schizophrenics showing hallucinations, confusion and ideas of reference had a retention longer than five days.

In a subsequent study Henry reports 40 cases of manic states and 56 cases of depression with 18 recovered cases used as controls. In this group he found that 25 per cent of the manic patients and 68 per cent of the depressed retained barium for a period of longer than five days. He contrasted this with a group of 14 acute schizophrenics of whom 72 per cent retained the barium longer than five days. He found that there was no change in the gastro-intestinal function so long as there was no change in the emotional state.

Henry feels that his observations might be regarded as corroborative of the psychoanalytic formulations, namely, that the retardation of viseral functions is a physiological result of the incorporative and retentive tendencies of the patients toward their love objects. Henry also observed intestinal stasis in cases of schizophrenia but did not raise the question of a possible psychodynamic relationship between intestinal stasis and schizophrenic delusions.

Stärcke in 1919 and Ophuijsen in 1920 pointed out the association of paranoid ideas in neurotic patients with anal tendencies suggesting that the persecutory ideas originate from the projection of anal aggressive tendencies. In the first chapter of this study we refer to the psychological findings of the Institute for Psychoanalysis of Chicago, in cases of constipation which led us to suspect that persecutory ideas and constipation have a close relationship to each other.

GENERAL EVALUATION OF THE STATISTICAL FINDINGS

A definite correlation has been found between the frequency of mild and severe constipation and the occurrence of persecutory ideas. Schizophrenics without persecutory ideas show much less frequency of constipation. These findings confirmed our expectation that the tendency to retain intestinal content is psychodynamically connected with the persecutory ideas. Both are results of the patient's conflict about his anal sadistic tendencies. The persecutory delusions are projections of the patient's own anal sadistic tendencies which he denies and attributes to others. The constipation can be explained as the result of the inhibition of the patient's anal-sadistically evaluated excremental functions.

Although these conclusions seem convincing, yet it could be questioned whether one is justified in explaining the frequent constipation as due specifically to persecutory mechanisms. The fact that cases with persecutory delusions show constipation in a higher percentage could be explained on a different basis: Persecutory fantasies are common at the beginning of all types of schizophrenia which later may develop into a hebephrenic, catatonic, or paranoid direction. This fact and other reasons suggest that paranoid symptoms are signs of an acute process, of an undecided conflict, paranoid symptoms being of all psychotic symptoms those which are nearest to neurotic mechanisms. They show the defense reactions of the ego against objectionable unconscious impulses. They are signs of the presence of a definite guilt conflict (super-ego reaction) because through the paranoid psychosis, the patient tries to push the blame onto others, and thus eliminate his guilt for his own destructive tendencies. In the light of these considerations one might argue that the frequent coincidence of persecutory fantasies with constipation is not due to a certain specific psychological content, but to the fact that these cases are the more acute ones in contradistinction to deteriorated hebephrenics. According to this concept, constipation would belong to the syndrome of an acute schizophrenic process. This possibility can hardly be eliminated on a merely statistical basis. We have to recur to detailed psychological material regarding the psychotic's attitude toward his nutritional and particularly toward his excremental functions. A few examples of such attitudes in individual cases included in our statistical material are presented in the following section and will supply further evidence for the correctness of assuming a specific psychodynamic relationship between persecutory ideas and chronic constipation.

EXAMPLES OF PARANOID SCHIZOPHRENICS' ATTITUDES TO THE EXCREMENTAL ACT AND FOOD

As we have already emphasized before, the sadistic evaluation of the excremental function is always mixed with its positive (coprophilic) evaluation. The two unconscious different motives for retaining the intestinal content are always intermixed: (1) because it is considered a valuable possession; (2) because it is considered as a destructive weapon.

Some of the remarks of the paranoid patients made about their excremental habits, although not allowing a specific interpretation of their motives, nevertheless show clearly that there is a psychological tendency to retain the excrements:

> "I feel better when I don't have a movement and I won't take a laxative."
>
> "My bowels never move. I am glad they don't move. I feel stronger when they don't."

This latter remark indicates a narcissistic evaluation of the excrements, well-known from the analysis of psychoneurotics as a residue of the infantile emotional life, attributing to the excrements the significance of potency.

In this connection it should be mentioned that the positive (coprophilic) attitude toward the excrements often serves as a basis for megalomanic fantasies. The megalomanic delusions are frequently transparent elaborations of the infantile way of connecting the excremental function with a feeling of power and potency. In a case of a young schizophrenic patient of Dr. Thomas A. Ratliff (whom we wish to thank for submitting this material) the patient's delusions were centered around ideas of his ability to destroy and control the environment through his excremental functions. In the majority of cases, however, the anal erotic source of megalomania is not so frankly expressed. It is to be expected that in cases suffering from such megalomanic delusions there will be less tendency for constipation. Patients who have no conflicts about their anal sadistic tendencies but accept them and derive from them a feeling of potency, naturally should not show any inhibition regarding their excremental functions. The number of megalomanic cases in our material is not sufficiently high to draw any conclusions. The few cases with megolamanic delusions included in our control group seem, however, to indicate that in fact the incidence of constipation in such cases is very small. A special statistical study is required to prove the correctness of this assumption. If this prediction should prove to be correct, it would be a further corroboration of these psychodynamic concepts about the influence of specific emotional factors upon the function of the gastro-intestinal tract.

Most conclusive are those remarks of patients which show that they do not want to assume the responsibility for their bowel movements, probably because of their destructive significance:

> "The radio does it—there are wires in it."
>
> "I can't take laxatives because they don't do any good."
>
> "It is all controlled by an urge from some general system."

"My bowels are directed by forces outside myself."
"I have only scientific movements."
"Your soul and mind can control your movements."
"I am irregular but I believe it is due to my bathing."

The formerly described emotional syllogism which is more characteristic for the depressive type of constipation, "I do not give because I do not get" is clearly expressed in the following remark of one of the paranoid cases:

"I only go once a week because we don't get enough to eat."

As has been mentioned before, a great number of these patients suffering from persecutory delusions are apt to express some objection about their food, that it was poisoned, that it had been tampered with, that the juice had been extracted, that there was no nourishment in it, that there was saltpeter or Spanish fly in it, that its consistency was such that they could not swallow it. In these complaints the projection of anal sadistic tendencies are clearly expressed. They depreciate the food which they receive, often in such a way as to leave no doubt that they compare it with excrements, as if they wanted to say:

> "It is not that I want to attack or soil or poison other people with my excrements—it is they who do it with me."

The food is either disgusting, or the nourishment has been extracted from it, or it smells, etc. Of this group of 39 delusional cases who expressed this type of objection against food, 8 (20.4 per cent) showed no constipation, 4 (10.3 per cent) mild constipation, and 27 (*69.3 per cent*) severe constipation.

THE HOMOSEXUAL COMPONENT IN PERSECUTORY DELUSIONS IN RELATION TO CHRONIC CONSTIPATION

In our discussion we restricted ourselves to explain the correlation of anal sadistic tendencies, persecutory delusions and intestinal retention. It is now time to consider the role of passive homosexual tendencies, because since Freud's early studies their close relationship to persecutory ideas is well-established. In his *Psychoanalytic Notes Upon an Autobiographical Account of a Case of Paranoia (Dementia Paranoides)* (1911) Freud pointed out that the aggressive hostile tendencies which the schizophrenic projects onto others, are defense reactions against the patient's passive feminine longings. The emotional syllogism which Freud expounds in this paper is: "I do not love him—I hate him." And the next step: "I do not love him—I hate him, because HE PERSECUTES ME."

According to this theory the aggressive tendencies do not constitute the deepest layer. They are only secondary defense reactions against the patient's denied and rejected passive homosexual longings. The validity of this concept for male paranoiacs has been corroborated repeatedly by a number of psychoanalytic authors. Also in our statistical material we found a series of cases whose remarks obviously pointed to this deeper homosexual component. In many cases it was quite obvious that the delusions did not refer so much to being persecuted or tortured but were of a pleasanter nature. The patients spoke only of being the center of attention, said that people were talking about them and they obviously derived much satisfaction from this special interest which people paid to them. Other patients expressed their passive homosexual interests more directly—they believed they were being accused of homosexuality but denied it, or by their obvious mannerisms, they assumed a coquettish female behavior toward the interviewer. In other cases the specific content of the paranoid delusions referred to the homosexual component. One of the patients believed, for example, that he received magnetic influences through a nail in his anus. The more the patient's ego is able to accept the female passive tendencies, the less are denial and defense reactions against them necessary. The first part of the emotional syllogism "I do not love him but I hate him" is not necessary if the patient has little conflict about admitting his feminine love toward another man. In these cases the delusions originate less from a guilty attitude and can express more directly the passive homosexual longings and they do not take such a sadomasochistic character as in the persecutory cases. Psychoanalytic experience with neurotics with unconscious passive homosexual tendencies has shown that constipation can serve as an autoerotic satisfaction of the passive desires, the anus assuming the role of the female receptive organ, the excrement that of the male organ. Thus the patient is able to satisfy autoerotically the desire for anal intercourse. We have little doubt that in a number of paranoid cases this autoerotic use of the excrements plays an important role in the causation of chronic constipation. These are the cases in which the inhibition of anal sadistic impulses is probably of lesser importance; the original passive feminine drive can express itself directly in the constipation. In the majority of the cases, however, according to the Freudian emotional formula, the original passive feminine tendency is denied and is strongly repressed and overshadowed by reactive hostile tendencies. Our study shows now that these hostile tendencies are of anal sadistic nature, which the psychotic denies and projects onto others, thus producing the persecution phantasies and at the same time the inhibition of the sadistically evaluated excremental act.

SUMMARY

In a number of psychoanalytically treated cases of chronic constipation, two different psychodynamic mechanisms, one typical in melancholia and another typical in paranoid disturbances, have been observed.

Patients either manifested a pessimistic defeatist attitude, to be rejected and not to receive anything from others, or they showed paranoid trends of being attacked and unjustly treated by others. A causal psychodynamic relationship between these emotional attitudes and the tendency to constipation had been assumed on the basis of the psychoanalytic material. In order to test the general validity of this causal connection a group of 100 cases showing persecutory delusions, and 100 control cases have been investigated with reference to their excremental habits and to their attitudes toward the excremental functions and toward food. It is conclusively shown that in the control group there is an incidence of 26 per cent of constipation, in contrast to 72 per cent of individuals suffering both from constipation and persecutory delusions. These figures in connection with the psychological attitude toward the excremental function and food expressed by these paranoid individuals confirm our conclusion that the psychodynamic basis of constipation is the same in psychotics suffering from persecutory delusions as in chronic constipation cases which show only traces of a paranoid attitude. The frequent constipation of patients suffering from persecutory delusions is mainly conditioned by their conflict about anal sadistic tendencies which they deny and project. Their frequent deprecatory attitude and delusions about their food is another manifestation of the projection of their anal sadistic impulses.

A statistical study of 40 patients suffering from depression corroborated the clinical observation regarding the frequent coincidence of depression and constipation (77.5 per cent). The specific causal relationship between the emotional attitudes in melancholia and constipation has been described on the basis of analytic observations made on cases suffering from chronic constipation who at the same time exhibited attitudes typical for depressions.

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EVIDENCES OF HOMOSEXUALITY IN ONE HUNDRED AND TWENTY UNANALYZED CASES WITH PARANOID CONTENT *

by

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The well known psychoanalytical theory that the delusions of persecution in paranoia have their origin in unsuccessfully repressed homosexual tendencies is as old as psychoanalysis itself, being intimated in the classic by Freud and Breuer in 1895. Again in 1905 Freud stated:

> The transformation of love into hatred, of tenderness into hostility, which is characteristic of a large number of neurotic cases and apparently of *all cases of paranoia* takes place by means of the union of cruelty with the libido.

This now well formulated theory is given clearly by Rickman in the following passages (p. 9):

> The exciting cause of the illness may be put down to an outburst of homosexual libido, and his (Schreber's) struggles against this produced a conflict which gave rise to the pathological phenomena.
>
> The cause of the conflict, then, in the case of a male is the homosexual wish—phantasy of *loving a man*—at any rate the supposition seems to be valid for one type of paranoia. It is, however, a remarkable fact that the most familiar forms of paranoia can all be represented as contradicting a single proposition; "I (a man) *love him* (a man)." . . . In persecution mania the proposition is contradicted by the assertion, "I do not love him." But we remember that in the unconscious negative propositions do not exist, the only form possible is: "I *hate* him," but this, on the other hand, cannot become conscious to the paranoias in this form. The mechanism of symptom formation requires that internal perceptions or feelings should be replaced by external ones, consequently the formula is changed from "I hate him" to "He hates (persecutes) me, which will justify my hating him." Observation leaves no room for doubt that the persecutor is someone who was once loved.
>
> P. 9. The person who is now hated and feared as a persecutor was at one time loved and honored. The purpose of the delusional persecution is to serve as a justification for the change in emotional attitude.

Returning to the contributions to the psychoanalytical literature on the subject of paranoia we find that little is written on the subject following the above mentioned works of Freud till the year 1910. At this time and till the war years many studies of ego-development and narcissism added to the theory of psychoanalysis and naturally there was a concomitant interest evidenced in the analyses of cases of paranoia.

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In 1910 Maeder's findings in the paranoid types of dementia precox supported the notion of the presence of homosexual trends. The following year Freud in the celebrated case of Dr. Jur. David Paul Schreber showed in detail the psychical mechanisms in the paranoid conditions. In the same year there were papers by Wulff and Ferenczi, the former stating that he completed his work in ignorance of Freud's analysis of Dr. Schreber.

In 1912 there were four more significant contributions to the general topic by Morichau-Beauchant, Bjerre, Grebelskaja, and by an American, Burr. Though the point is not emphasized by Burr we can probably infer that his case showed delusions of persecution of a homosexual nature, for he states (p. 114):

> . . . people were trying to poison him and . . . his male nurse wanted to do improper things to him.

Ferenczi added a second paper in 1914 and at this time Shockley stated (p. 432):

> This theory, that homosexuality is the determining factor in producing these conditions (paranoid) may in fact be regarded as proven, as it has been observed by so many writers.

Payne after a systematic study of the literature concluded (p. 200):

> The most salient feature of the series and probably the most valuable contribution here made to the subject of paranoia is the relation existing between paranoia (here I include paranoic symptoms whether occurring in true paranoia or in some other psychosis or even neurosis) and homosexuality.

After a six-year interval in 1920 we note a second period of interest in the analysis of paranoia and there follows a group of important communications. Helene Deutsch confirms the notion when she tells us (p. 344):

> Suspicion makes use of projection like the delusion of persecution, but in distinction from paranoia it does always have *homosexuality* as its basis, . . .

And Stärcke (p. 232):

> In very many cases patients complain that people want to turn them into "homosexuals" or want to commit "sodomy" with them.

Van Ophuijsen in an article pointing out the connection between persecution and anal-eroticism concludes (p. 238):

> The persecution may be an assault from behind on the part of persons with homosexual intentions, . . .

Berkeley-Hill cited a case in 1922 and a year later Freud again turned his attention to this topic, stating significantly (p. 5):

> This ambivalence thus serves the same purpose for the persecuted paranoiac as jealousy serves for our patient—that of a defence against homosexuality.

Concomitant with these studies of paranoia analyses of special type cases of persecution were being attempted and the findings in respect to alleged homosexuality are important. Juliusberger in discussing the delusions and the sadistic acts arising therefrom in alcoholism, cites unsuccessfully repressed homosexuality as an unconscious cause. Rigall states in reference to alcoholic delusions of persecutions (p. 161):

> The paranoiac projects his own repressed homosexuality, but the unpleasant idea of homosexual love is changed into its opposite, whence delusions of persecution appear.

Abraham in discussing the relationship between the delusions of persecution and sexuality seen in alcoholics also cites the possibility of inversion.

Kielholz in a very interesting communication avers that the basis of inventor's delusion may be found in unconscious homosexual trends. In addition to this other specific types of delusions of persecution arising from varied conditions such as are seen in the deaf and in certain forms of "prison psychoses" are alleged to arise from the same source.

Thus we see that in a large number of individual cases with delusions of persecution where psychoanalysis has been attempted that the basis of the delusions is repressed homosexuality. The question then arises, in what proportion of a given number of cases of paranoia could we expect to find such a causal factor? One method of approach in reaching a tentative answer to this question lies in a search for evidence of this factor in a fairly large group of unanalyzed cases. To be sure we get but the conscious manifestations of such factors by this method and the author is aware that the procedure is open to attack from orthodox psychoanalysts on the grounds of incompleteness, yet we feel that the results obtained are of significance to the clinician and to the student of psychoanalytic doctrine.

Hence we have examined 120 cases admitted to McLean and later diagnosed as "paranoid dementia precox" or "paranoid condition." Forty of our cases were listed in the precox group and 80 were diagnosed "paranoid condition." These cases were consecutive admissions with either of these diagnoses and the only selection factor used was the exclusion of alcoholics with delusions of persecution which cases we have separated for another study. In all instances we have assumed the presence of unconscious homosexual drives only if one of two conditions existed, namely:

1. If the patient had made homosexual attacks or if he explicitly stated through his delusions that he was being attacked by others in this way.

2. If the patient, though not definitely stating either of the above conditions, showed unmistakably through symbolism in action or words that his delusions had such a basis. This assumption was made only when the symbolism was so indicative that probably no psychiatrist would challenge the inference.

With this selection we find the following distribution of evidences of latent homosexuality in our 120 cases:

I. Paranoid Dementia Precox

	MALE	FEMALE	TOTAL
Number of cases	18	22	40
Homosexuality	7	5	12
Symbolism	4	6	10
Total	11	11	22
Percentage	61	50	55

II. Paranoid Condition

	MALE	FEMALE	TOTAL
Number of cases	42	38	80
Homosexuality	6	6	12
Symbolism	14	6	20
Total	20	12	32
Percentage	47	31	40

From our study we can draw the following conclusions:

1. A review of the literature shows that the psychoanalysis of many cases exhibiting delusions of persecution indicates that the bases of the delusions are the repressed homosexual trends of the patient.

2. A survey of 120 unanalyzed cases exhibiting such delusions shows that in 45 per cent of the cases there were evidences of such trends in the conscious behavior of the patients.

3. Unanalyzed cases of paranoid dementia precox exhibit such trends in a greater percentage of cases than do cases diagnosed "paranoid condition."

IV. Experimental Psychopathology

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THE DYNAMICS OF THE SELECTIVE INHIBITION OF SPECIFIC FUNCTIONS IN NEUROSIS:

A Preliminary Report *

by

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This is a preliminary report of an experiment devised to demonstrate the dynamics of the specific loss of function in neurosis. Much work has been done by other investigators to indicate that conflict in intention is followed by paralysis of effort to produce a variety of neurotic phenomena. Attempts have been made on the basis of animal experimentation and clinical analysis to explain the diverse nervous patterns that develop with inhibition of function.

M. J. Sanders demonstrated experimentally in the rat that a threat to the animal's security is followed by a retreat from a more logical, recently acquired, mode of adaptation to a more primitive type of mastery. She trained five rats to run down an initial common path and then to take a detour either to the right or left. Both detours led to a final common path at the end of which they received food. Definite preferences were shown by individual rats for one or the other initial detour. Sanders assumed these preferences to be "unlearned" and "ontogenetically lower." The preference for a given route was strengthened by introducing a differential temporal delay in the final common path consisting of five seconds if the preferred path were taken, and ninety seconds if the unpreferred path were taken. The training period continued until the preferred path was chosen thirty-six out of forty trials. At this time the procedure was reversed, the long delay being introduced when the preferred path was chosen, and the short delay when the path originally unpreferred was taken. This procedure was continued until the animals chose the previously unpreferred path in thirty-six of forty trials. At this point each rat was shocked by an electric grill just before it reached the end of the initial common path.

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All the animals reverted at once to the originally preferred route, although this course was not now "adaptive by any objective standard," since it continued to involve a longer delay in the final common path.

O. H. Mowrer devised an experiment in which "frustration" of one mode of adjustment (habit B) caused "regression" in one group of rats to an earlier mode of adjustment (habit A), but did not lead to "regression" in another group of rats that had not practised habit A before acquiring habit B.

D. M. Levy in an experiment with dogs prevented completion of the suckling phase in the feeding act, i.e., caused an insufficiency of sucking. This was followed by excessive sucking activity. The animals showed increased licking tendencies until the sixty-fourth day of life.

J. McV. Hunt reported an experiment to evaluate first, the effect of infantile experience upon adult behavior, and second, to determine the relationship between the age at which the experience occurred and its effect upon mature behavior. A group of rats twenty-four days old and another thirty-two days old were submitted to ten-minute feedings at irregular intervals for fifteen days, while their litter mate controls were allowed as much food as they could eat. Then, after five months of unlimited food for both experimental animals and controls, the number of food pellets hoarded by the animals in each group both before and after a five-day period of adult feeding frustration were compared. In the post-frustration tests, the experimental animals in the twenty-four day group hoarded more than two and a half times as many pellets as their litter mate controls, while the experimental animals of the thirty-two day group hoarded approximately the same amount as their controls and the controls of the twenty-four day group. These results offered evidence in favor of the theory that in lower animals infantile experience does affect behavior in maturity and that the earlier experience is more critical in its effect on adult behavior than the later.

Felix Deutsch contends that a mutual interaction between emotional and physiological processes must be considered to be present permanently in every human being independently of whether total function proceeds normally or abnormally. This presupposes a continual fusion between somatic and emotional processes inherent in physiological or pathological function. If a pathological emotional process was once able to invalidate an organic function, any repetition of this process may lead to the same patho-physiological response and may be only the expression of this abnormal emotional state. This implies that the same disturbance may arise when a disturbed organ happens to be malfunctioning during an emotional conflict which would have been solved without difficulty if the physiological function were not upset at the critical moment. The aforementioned fusion, once expressed in organic dysfunction, can remain latent but may find visible renewal under various conditions. This fusion may be regarded as having a potential energy so that it will react as a unit and in a specific way whenever a part of this unit is stimulated, producing a psychosomatic complex of symptoms. The concept of organ neuroses stresses three facts: first, the specificity of the personality organization; second, the specificity of the organic symptom complex; and third, the interaction between these two factors. The organ or one of its functions *must* have been involved in the psychosomatic process at a very early time. The rigidity of the symptom depends upon this time factor, because the malfunction of the organ must have been associated with an emotional conflict at this early period; this is conducive to its formation. What is characteristic of the psychosomatic unit is the fact that there has been a transient disturbance of an organic nature which coincided with a need for expression on the part of the "instinctual" drives.

In spite of these and a good deal more animal and clinical researches into the significance and character of infantile experience in determining the nature of disturbed adaptation in maturity, it has not yet been demonstrated how the inhibition of various functions can be predetermined in neurotic maturity. It has never been indicated by animal experimentation just how these particular deprivations acquire their special character, why it is that one neurotic develops hemiparesis; another, dysphagia; still another, stuttering, and so on. The theoretical base from which the experiment proceeded lay in the clinical observation that patients appear under stress to retreat to infantile patterns of adaptation losing in the process fully developed resources acquired in maturation. A man who was not weaned from the bottle until five years of age is discovered in neurotic maturity to overact under stress. Another patient who did not develop bladder continence until five years of age becomes incontinent under stress in maturity, and so on.

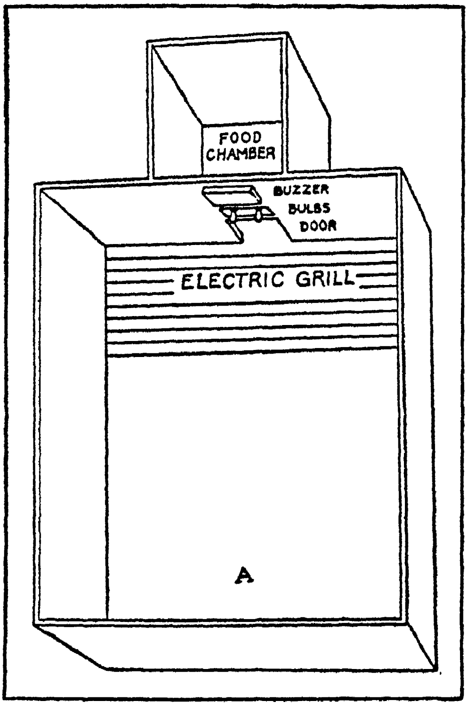
METHODS

The aim of the investigation was to demonstrate that by inhibiting particular functions in the nursing period one could predict in maturity the special forms maladjustment would take, and that these would be determined by the character of the infantile deprivation; to study the effect of inhibition of sight or hearing in the nursing period on reactions to stress in maturity. A plan was laid to deprive nurslings of the function of these special senses without doing them organic injury. An experimental approach to the problem under controlled laboratory conditions was devised. Animals were observed from birth to maturity. The albino rat was chosen as the subject of investigation because of its rapid rate of development. Maturation studies carried out at the Wistar Institute have indicated that for the albino rat, the period of infancy during which it is dependent upon the mother for nutrition lasts about twenty-five days. Both the male and the female reach sexual maturity in approximately sixty days.

Seven litters totalling forty-four animals were employed in the first experiment. Each litter was divided into three groups: two experimental and one control. On the tenth day after birth, the ears of one group of rats from each litter were sealed with cotton and paraffin under ether anaesthesia. Twelve to fifteen days after birth the eyes of the second group of rats from each litter were sealed under ether anaesthesia. The area immediately surrounding the eyes was covered with a small piece of gauze saturated with petroleum jelly to prevent injury to the eyes. The head was then encased in a paraffin cast with apertures for the ears, mouth and external nares. The eyes and ears were not sealed until one day after the particular sense organ had begun to function. The purpose of this procedure was to allow the animal some experience with the particular function before the sense organ was sealed. Had the eyes been closed, for example, before the animal had had any experience with vision, there would not have been a true deprivation of function. For the same reason, namely, to reinforce specific frustration in the dependent period, the rats were permitted to nurse undisturbed for the first ten or fifteen days of life. The third group of each litter was not interfered with in any way during infancy. The animals in this group served as controls.

Twenty-five days after birth, i.e., at the end of the nursing period, the various sealings were removed from the eyes or ears of the rats in the first two groups. In order to make certain that all social factors were constant every animal, now weaned, was separated from the mother. Each rat was placed in an individual cage and kept in this state of isolation for fourteen days. During this period, they were allowed to mature normally—that is they were not disturbed in any way.

Training Period A (*Visual Stimulus*). At the termination of the isolation period (the animals were now thirty-nine days old) each rat was subjected to a period of training in the apparatus described in Figure One. The animal was conditioned to stand quietly at one end of the training box (the area designated in the drawing by the letter A), until the bulbs at the other end of the box were illuminated. The floor of the waiting or reception chamber was wired with an electric grid which could be charged or discharged at the will of the experimenter. When the light stimulus was presented, the rat was required to run to the opposite end of the apparatus to a feeding chamber. Each rat was trained to associate the flashing light with the presentation of food. The animals were starved for twelve hours preceding each day's training; the food served as a reward; and they came to the experiment hungry and evidently eager to master the obstacles between them and the food. Each animal was trained singly and in isolation from the others until his response to the stimulus had an easy precision. The training period consisted of ten trials daily for ten consecutive days. The criterion of learning was errorless trials on the tenth day of training. If the animal responded before the stimulus was presented or failed to respond when the stimulus was presented, this was counted as an error. If the rat ran toward the feeding chamber without waiting for the signal, he was shocked electrically. Each response had to be made in less than five seconds after the stimulus was presented. If this level of learning was not reached by the tenth day training was continued until the time it was reached. In no case was it necessary to prolong training beyond the tenth day. By that time the animal was so conditioned that he would sit restlessly in the reception chamber watching alertly for the light signal, would immediately dash through the door to the feeding chamber when he saw the flash and eat the pellet in the feeding dish.



Competitive Period A (*Visual Stimulus*). Following the period of individual training, each animal whose eyes were sealed in infancy was placed in competition for a piece of food with an animal (of the same litter) whose ears were sealed in the nursing period. The two rats were placed in the apparatus used for their individual training. When the stimulus was presented (bulbs illuminated), the animals were required to run to the food chamber. The rat that reached the chamber first, received the food. Each control was placed in competition with another control of the same litter. The animals were given ten trials daily for twenty days. The competitive pairs were never changed, that is, in every trial the same two animals competed.

Training Period B (Auditory Stimulus). At the termination of competitive Period A each animal was again subjected to a period of individual training in the same apparatus. The procedure in this case was, with one exception, identical with that of Training Period A. In this case the animals were required to respond to an auditory stimulus, namely, a buzzer. The response demanded was no different from that required in the previous training period.

Competitive Period B (Auditory Stimulus). Following Training Period B, the rats were again placed in competition. Each animal was pitted against its original competitor. A pair of rats was placed in the apparatus. When the buzzer was sounded, the animals were required to run to the food chamber. The rat reaching the chamber first, received the food. Each pair of animals was given ten trials daily for twenty days.

Every precaution was taken to treat the animals in a uniform way apart from the special character of the conditioning. All the rats were handled by one person. This technique excluded the possibility of a variable response to the approach of different experimenters.

EXPECTATIONS

If inhibiting a function during the nursing period does produce a specific loss or at least a partial withdrawal of that function in maturity when the organism is experiencing any severe tension or stress under competition for food, the loss or disturbance would be exhibited in this experimental situation in the following manner:

1. When the animals compete in the visual situation, the rat that was deprived of vision in infancy should,
   a. not respond at all to the visual stimulus, or
   b. its ability to respond to the visual stimulus should be sufficiently disturbed as to make its responses poor in relation to its competitor's, that is, this particular rat should "lose" consistently.
2. On the other hand the animal deprived of hearing in infancy should have no difficulty whatsoever in the visual situation.
3. When the animals compete in the auditory situation, we should expect to find the same symptoms of disturbance (described above) in the animals that were deprived of hearing in infancy. Similarly, the rats deprived of vision in the nursing period should experience no difficulty.
4. As for the controls we should not expect to find any shift in the

per cent of total trials "won" by any animal when the visual situation is replaced by the auditory situation; that is, if control A consistently "wins" in the visual situation, we should expect that he will at least win more often than his competitor in the auditory situation. Similarly, we should expect a constant "loser" in the visual situation to be a consistent "loser" in the auditory situation.

RESULTS

There follows a tabulation of the results with forty-four animals: fourteen in the "visual" group, fourteen in the "auditory" group and sixteen controls.

Visual Situation

Results (Quantitative)

Experimental Groups

In the following table are shown the number of trials "won" by each animal of every competing pair out of a total of 200 trials. The letter following each identification number indicates the litter of which the rat is a member.

Animals deprived of vision		*Animals deprived of hearing*	
Rat No.	No. of trials won	Rat No.	No. of trials won
1H	63	4H	137
2H	90	6H	110
7C	89	1C	111
3C	77	6C	123
4G	91	5G	109
1G	20	7G	180
12A	70	8A	130
2A	81	4A	119
6F	79	1F	121
7F	90	3F	110
2L	78	6L	122
3L	83	1L	117
6D	62	5D	138
2D	89	3D	111

Average no. of trials won: 75.86 Average no. of trials won: 124.14
Percentage of total won: 37.93 Percentage of total won: 62.07

Auditory Situation

Results (Quantitative)

Experimental Groups

In the following table are shown the number of trials "won" by each animal of each competing pair out of a total of 200 trials. The letter following each identification number indicates the litter to which the rat belongs.

Animals deprived of vision

Rat No.	No. of trials won
1H	117
2H	102
7C	141
3C	98
4G	123
1G	84
12A	102
2A	131
6F	131
7F	159
2L	146
3L	124
6D	103
2D	147

Average no. of trials won: 122.00
Percentage of total won: 61.00

Animals deprived of hearing

Rat No.	No. of trials won
4H	83
6H	98
1C	59
6C	102
5G	77
7G	116
8A	98
4A	69
1F	69
3F	41
6L	54
1L	76
5D	97
3D	53

Average no. of trials won: 78.00
Percentage of total won: 39.00

The fourteen nursing animals originally deprived of vision won 37.93% of the trials in a situation in which the stimulus for competition was visual while the fourteen rats once deprived of hearing in infancy won 62.07%. When these *same* rats were placed in a setting in which the signal to compete for food was auditory, the results were reversed, that is, the animals whose eyes had originally been sealed "won" 61% of the trials; and the rats whose ears had once been plugged "won" 39%.

For purposes of control, sixteen rats thirty-nine days old previously undisturbed in any way were trained and placed in competition in pairs.

Visual Situation

Results (Quantitative)

Control Group

In the following table are shown the number of trials "won" by each animal of each competing pair out of a total of 200 trials. The letter following each identification number indicates the litter to which the rat belongs.

Rat No.	No. of trials won
3H	154
2C	110
2G	137
1A	156
4F	119
5L	154
1D	129
7D	105

Average no. of trials won: 133
Percentage of total won: 66.50

Rat No.	No. of trials won
5H	46
5C	90
3G	63
5A	44
5F	81
4L	46
4D	71
8D	95

Average no. of trials won: 67
Percentage of total won: 33.50

Auditory Situation

Results (Quantitative)

Control Group

In the following table are shown the number of trials won by each animal of each competing pair out of a total of 200 trials. The letter following each identification number indicates the litter to which each rat belongs.

The animals listed on the left hand of the table are those that won consistently in the visual situation.

Rat No.	No. of trials won	Rat No.	No. of trials won
3H	170	5H	30
2C	126	5C	74
2G	162	3G	38
1A	181	5A	19
4F	117	5F	83
5L	149	4L	51
1D	159	4D	41
7D	132	8D	68

Average no. of trials won: 149.50
Percentage of total won: 74.75

Average no. of trials won: 50.50
Percentage of total won: 25.25

In response to the bulb signal one group of eight animals "won" 66.50% of the total trials, and the second group "won" 33.50%. When the stimulus for competition was changed to a buzzer, there was no reversal in performance. In fact, the first group increased its percentage of trials "won" to 74.75, while the second group dropped to 25.25%. This result reinforces the significance of the altered response to light and sound among the animals functionally traumatized in the nursing period. The specific character of the inhibition is demonstrated by the inability to use a particular special sense under the stress of competition.

There follows a tabulation of the results with eighteen additional animals treated in the same way as the previous forty-four, but functionally deprived of sight or hearing at the 26th, 50th, and 75th day of life. The sealings were imposed for the same duration as with the nurslings and the same interval of time was allowed to elapse before training and competition were imposed.

More Mature Animals

Age	No. of animals	Division: Eyes sealed	Division: Ears sealed
26 days old	6	3	3
50 days old	6	3	3
75 days old	6	3	3

Results in Maturity with Animals Subjected to Sealing 26 Days after Birth

In the following table are shown the number of trials "won" by each animal of every competing pair out of a total of 200 trials.

Visual Situation

Animals Whose Eyes Were Sealed

Rat No.	No. of trials won
36	80
21	145
5	109

Average no. of trials won: 111.33
Percentage of total won: 55.66

Animals Whose Ears Were Sealed

Rat No.	No. of trials won
19	120
11	55
20	91

Average no. of trials won: 88.67
Percentage of total won: 44.34

Auditory Situation

Animals Whose Eyes Were Sealed

Rat No.	No. of trials won
36	61
21	132
5	71

Average no. of trials won: 88
Percentage of total won: 44

Animals Whose Ears Were Sealed

Rat No.	No. of trials won
19	139
11	68
20	129

Average no. of trials won: 112
Percentage of total won: 56

Results in Maturity with Animals Subjected to Sealing 50 Days after Birth

In the following table are shown the number of trials "won" by each animal of every competing pair out of a total of 200 trials.

Visual Situation

Animals Whose Eyes Were Sealed

Rat No.	No. of trials won
61	90
64	81
68	100

Average no. of trials won: 90.33
Percentage of total won: 45.16

Animals Whose Ears Were Sealed

Rat No.	No. of trials won
62	110
69	119
63	100

Average no. of trials won: 109.67
Percentage of total won: 54.84

Auditory Situation

Animals Whose Eyes Were Sealed

Rat No.	No. of trials won
61	84
64	95
68	22

Average no. of trials won: 67
Percentage of total won: 33.50

Animals Whose Ears Were Sealed

Rat No.	No. of trials won
62	116
69	105
63	178

Average no. of trials won: 133
Percentage of total won: 66.50

Results in Maturity with Animals Subjected to Sealing 75 Days after Birth

In the following table are shown the number of trials "won" by each animal of every competing pair out of a total of 200 trials.

Visual Situation

Animals Whose Eyes Were Sealed

Rat No.	No. of trials won
41	116
49	109
40	72

Average no. of trials won: 99
Percentage of total won: 49.50

Animals Whose Ears Were Sealed

Rat No.	No. of trials won
48	84
47	91
42	128

Average no. of trials won: 101
Percentage of total won: 50.50

Auditory Situation

Animals Whose Eyes Were Sealed

Rat No.	No. of trials won
41	140
49	100
40	30

Average no. of trials won: 90
Percentage of total won: 45

Animals Whose Ears Were Sealed

Rat No.	No. of trials won
48	60
47	100
42	170

Average no. of trials won: 110
Percentage of total won: 55

The rats were chosen at these particular ages in order to compare them with the nurslings. Twenty-six day old animals have just completed the nursing period. Fifty-day old rats are just short of maturity. And seventy-five day old animals are adult. There were six rats in each group, three whose eyes were sealed and three whose ears were plugged. The duration of visual and auditory deprivation, free undisturbed interval, training and competitive periods were the same as with the original nurslings.

The three animals of the twenty-six day old group earlier deprived of vision "won" 55.66% of the trials in the situation in which the stimulus for competition was visual, while the three rats originally deprived of hearing in the same age group "won" 44.34%. When these *same* animals were placed in the setting in which the signal to compete for food was auditory, the group whose lids had once been sealed "won" 44% of the trials, and the animals whose ears had formerly been plugged "won" 56%. The percentage differences do not appear significant.

The three animals of the fifty-day old group earlier deprived of vision "won" 45.16% of the trials in the situation in which the stimulus for competition was visual, while the three rats originally deprived of hearing in the same age group "won" 54.84%. When these *same* animals were placed in the setting in which the signal to compete for food was auditory, the group whose lids had once been sealed "won" 33.50% of the trials, and the animals whose ears had formerly been plugged won 66.50%. The percentage difference in the visual situation does not appear significant. However, while the slightly higher percentage of trials won by the "ear" animals in the "visual" situation has no significance, the increase in the percentage "won" by the same group to 66.50 in the "auditory" situation does have meaning, because it indicates by contrast with the reversal in performance in the same setting of the animals traumatized as nurslings the failure of the functional deprivation imposed after the fiftieth day to affect the organism in maturity.

The three animals of the seventy-five day old group earlier deprived of vision "won" 49.50% of the trials in the situation in which the stimulus for competition was visual, while the three rats originally deprived of hearing in the same age group "won" 50.50%. When these same animals were placed in the setting in which the signal to compete for food was auditory, the group whose lids had once been sealed "won" 45% of the trials, and the animals whose ears had formerly been plugged, "won" 55%. The percentage differences do not appear significant although what was said in comment on the fifty-day old group, might hold here in much less degree. Perhaps the most revealing observations to be made are (1) the relative equality of performance of "eye" and "ear" animals regardless of the "visual" or "auditory" setting; (2) the failure to establish a reversal of performance with a change in the character of the stimulus; (3) the increase in percentage won in two instances with a change in the nature of the stimulus; (4) and the fact that there is no inhibition of sight or hearing in competition if these functions were sealed off between the twenty-fifth and seventy-fifth day of life. The fundamental significance of these findings is that if in the post-infantile stage a rat is subjected to the strain of competition, he is not handicapped in the functions of which he was deprived after the nursing period. A handicap appears only on such functions as were incompletely exercised during the suckling stage.

DISCUSSION

It is felt that this research clarifies experimentally the relationship between early disturbances in the adaptive equipment of an organism and abnormal reaction-types in maturity; the reason for the specific character of symptoms in maladjustment; and the relatively minor role constitution plays in accounting for one organism's susceptibility to maladjustment and another's hardiness under similar stress. An assurance that the differences in performance demonstrated by the experimental animals in no way depend upon inherited characteristics lies in the predictability of the results among rats selected at random from the same laboratory stock. The possibility that a neurotic strain of animals was used and that this might have been the cause of the withdrawal of special functions was eliminated by the use of split litters, that is, each litter was divided into experimental animals and controls. The fact that the controls did not exhibit any inhibition of particular functions disposes of such a complicating possibility.

It is a common conception of modern psychology that most abnormal reaction-types in human beings have their origin in various conditionings and maladjustments in infancy and early childhood. However, there are limits to the comparison that can be made between behavior reactions of human beings and those of rats. In the latter, phylogenetic patterns play a greater role in adult behavior than they do in man. Nevertheless, there is sufficient individualization of performance in rats to permit certain broad analogies to be drawn, particularly where the disturbance in adaptive equipment is so critical. The experimental production of behavior disturbances in animals has been repeatedly described by Pavlov, Liddell, Schneirla, Maier, Cook and others. It is necessary to point out, however, that in all these instances the emphasis has been on partial reactions, the number of drops of saliva produced, the appearance or disappearance of certain conditioned reflexes, disturbances in eating reactions. At no time in these researches does there seem to be a conception of the animal as a total organism reacting to changes in its internal and external environment. It is from this larger aspect approximating insofar as possible our approach to human behavior disorders that laboratory animals are being studied.

It appears that animals who have been subjected to inhibition of function while in a state of infantile dependency adjust adequately in maturity with the full development of their resources until their security is threatened to such a degree that they seem unable to cope with new hazards in their environment with the easy appropriate behaviour necessary to attain mastery over a given problem. In these experiments the most effective barrier against this resourceful handling of a difficult reality has been to present the animal with the necessity to struggle for gratification in a rivalry situation. Confronted with this obstacle there is a tendency to retreat to the use of older infantile patterns that were once associated with gratification and mastery. These were the conditioned reflexes of the nursing period when security involved the exploitation of the mother. As the animal retreats to its earlier adaptation with the expectation of secure fulfillment, it is frustrated since its backsliding involves the loss of maturely developed skills. What determines the particular refinement of function that is lost is the degree to which the animal's resources are developed in dependency. He loses those functions in neurosis which were inhibited or incompletely refined in the infantile period. This seems to be a matter of conditioning. Failing masterful channelization of energy in maturity, the rat automatically recovers an older strategy which used to serve a gratifying end.

There is a possible alternative explanation for the type of response that was obtained in this experiment. It is conceivable instead of interpreting the "loser" as having suffered an inhibition of function that the "winner" be understood to have beaten his rival because of the greater acuteness of his sight or hearing. It might be said that when hearing was interfered with in the nursing period, sight was necessarily depended upon and developed to compensate for the delimitation of auditory function; similarly that when vision was obstructed in infancy, hearing became exaggerated to improve orientation. This would put another light on the significance of "winning" and "losing" later on. The animal whose eyes were once sealed might have "won" in an "auditory" situation because of his greater auditory acuity, whereas the conviction so far has been that his rival "lost" because of his inability to hear. The animal whose ears were once sealed might have "won" in a "visual" situation because of compensatory visual acuity, whereas up to now it has been held that his competitor "lost" because of his inability to see. The conception that there was an exaggerated compensatory function that led to winning is untenable for at least three reasons. In the first place, the "winner" never responded more rapidly to the stimulus in competition than in isolated performance. This would indicate that there was no exaggeration of functional acuity. In the second place, while the timing of the "loser" was as fast as that of the "winner" in isolated performance, he invariably showed in competition a delayed response of five or six seconds after the stimulus was presented. He would always assume a rigid, tense position in the reception chamber and then hesitatingly follow the other animal toward the feeding chamber. There was no corresponding improved response to indicate better function in the "winners." All reactions to the stimuli whether in isolated trials or in competition were immediate except for the "losing" animal whose earlier deprivation of special sense was being tested. There is a third point to be made. In one mature rat whose eyes had been sealed in the nursing period without organic damage, there developed in rivalry for food a striking behavior that was suggestive of functional blindness. When food was presented and his competitor won it, he (the animal whose eyes had originally been sealed) would rise up on his hind limbs and spar aimlessly at space before him as if attempting defensively to ward off the other rat who was often nowhere near him; or he would stand similarly poised simply staring straight ahead, apparently unable to follow the movement of the other rat. A finger passed across his field of vision appeared to offer no stimulation since he always maintained the same impassive yet somehow alert attitude, much like that of a blind man. This curious behavior was assumed only when the animal was placed in competition for food. At other times he was obviously visually aware of his environment. On several occasions he was set in rivalry in a completely dark room. When a powerful beam of light was flashed into the eyes of the other animal, he blinked and closed his lids but the visually inhibited rat maintained a wide-eyed unresponsiveness to the same stimulus. Whenever the light was flashed on him in non-competitive situations, he blinked appropriately. No brief is held on the basis of this observation for the positive functional blindness of this animal but his behavior was certainly suggestive of neurotic visual inhibition. The burden of proof that it is possible to produce in rats an actual functional loss of sight lies in the body of the experiment. These findings would point in the direction of retreat to a prior adjustment with the inhibition of function then prevalent rather than to the improvement of special senses.

While studies of dominance in other animals indicate that weight during the nursing period is a significant factor determining which animal becomes dominant, there is no question of dominance involved in this experiment. "Winning" as a result of greater infantile weight, although a possible factor, is excluded as a serious complication by the large number of animals used, by the striking shift from "winning" to "losing" with the change in stimulus, by the absence of such a reversal among the controls, and by the fact that heavier animals "lost" just as frequently as they "won" in the type of competitive struggle to which they were subjected in this experiment. To avoid the complication of confusion with genetic conceptions and terminology, the words "recessiveness" and "dominance" were not used. "Passive" and "active," "submissive" and "aggressive" laid too much emphasis on the *competitive* aspects of the problem. The aim of the experiment was rather to clarify the dynamics of the withdrawal of particular function when a mature animal was under tension. It seemed most appropriate therefore to confine our terms simply to trials "won" or trials "lost."

When normal animals are placed in competition, the frustration resulting from not receiving food in the trials in which the competitor wins may produce inhibition or withdrawal on the part of the frustrated animal. This may or may not have some effect upon the dominance status of the losing animal. However, in the author's experiment this is not the case, even if the reversibility of "winning" and "losing" were the only indication of the plasticity of the animal's response. Here the animals were prematurely deprived of some function. The fact that they "won" or "lost" in rivalry was a consequence of the inability under competitive stress to exercise a particular inhibited function whose use was essential to mastery in the struggle. The rivalry between the two mature rats resulted in the withdrawal of the function upon which the animal's ability to respond depended. This observation is supported by the finding that the rats originally deprived of sight "lost" in the "visual" situation and "won" in the "auditory" situation; that the animals originally deprived of hearing "lost" in the "auditory" situation and "won" in the "visual" situation. Therefore the words "dominance" and "submission" are irrelevant.

It is conceivable that under the strain of competition there is a tendency on the part of all the neurotic animals to inhibit various functions. However, only one function at a time is being examined during competition, sight or hearing, depending on whether light or sound is being used as a stimulus. The readiness with which the animals reverse from "winning" to "losing" with a change in the stimulus lays emphasis neither on dominance nor on competition but on the fact that neither animal is really permanently the other's master and that both lose particular functions in rivalry situations.

SUMMARY

Limitations put upon particular functions during the nursing period are followed by inhibitions of those functions in maturity when the organism is under stress. The tabulated results show clearly that the animals deprived of vision in infancy experienced great difficulty in responding to a visual stimulus under the strain of adult competition. Similarly, the animals deprived of hearing in the nursing period experienced considerable difficulty in responding to an auditory stimulus under the strain of competition. However, the rats whose vision was interfered with in infancy were able to respond easily in the auditory situation, and the animals whose hearing was originally disturbed showed no difficulty in responding to the visual stimulus. By contrast, the change from the buzzer to the light as a conditioning signal produced no remarkable alteration in the responses of the control animals. The rats that reacted well to the visual stimulus continued to do so in response to the auditory stimulus.

Integrated capacity to cope with reality is maintained until a rat reaches a competitive impasse. At this point mature responses disintegrate. The animal retreats to an immature previously conditioned response which formerly secured mastery over the environment. In the process of withdrawal it loses adult functions which were undeveloped in the nursing period. An analogy can be drawn with human neurotic behavior in which adults lose highly developed skills in retreating to out-moded but previously serviceable forms of adaptation and are left with inadequately evolved and incoordinate resources. The experiment illustrates the dynamics of the selective inhibition of particular function.

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THE ORIGIN AND DEVELOPMENT OF NERVOUS DISTURBANCES EXPERIMENTALLY PRODUCED *

by

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HISTORY

THE first experimental neurosis[1] produced in animals dates back a quarter of a century to the classical experiments of Pavlov made on the basis of his newly discovered method—that of the conditioned reflex. Like the discovery of the malarial treatment in dementia paralytica by two Russians in 1888—forty years before its general use—and the early reports of the use of sulphanilamid, these experiments of Pavlov attracted no attention until recently when they have been used by a good many workers in this country on various animals—from the rat to the primates. Pavlov showed that the disturbances in animals were manifested by an imbalance in the conditioned reflexes as well as by certain motor phenomena, and the workers in this country have been able to see in a variety of animals disturbances of behavior parallel to what Pavlov saw in dogs, *e.g.*, Liddell in sheep, pigs and goats; Maier in rats; Masserman and Dworkin in cats, etc.

PRESENT WORK

In addition to the production of the so-called experimental neurosis, the credit for which should go to Pavlov, I have extended this study along three main lines:

I. The production of a chronic anxiety-like neurosis, more properly a state of imbalance situationally determined, produced in 1933, which has lasted now for eight years in one dog.

II. The early detection of the breakdown by measurements of autonomic functions (secretory, cardiac, respiratory, sexual) with the animal under artificial strain. Such measures may reveal a disturbance long before there is a demonstrable change in overt behavior.

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[1] By the term neurosis no attempt is made to identify the state with what is clinically known by the same term. As experimental neurosis is the term introduced by Pavlov it is retained here.

III. A study of such a state of imbalance not only upon the CRs but the extension of this imbalance to involve many and various physiological systems—digestive, respiratory, circulatory, urinary, sexual, muscular activity as well as social relationships.

METHOD

The classical Pavlovian method was exposure of the animal to a difficult problem based upon a strong excitation. Practically this is carried out as follows: a strong food excitation is set up in a hungry animal; the giving of food is preceded by a signal over any receptor system so that the signal later acquires the function of producing the food excitation without the food—the conditioned food reflex. Next an inhibitory process is formed on the basis of the food excitation by some such method as the giving of a signal similar to the first one but always failing to reenforce it with food, until the animal reacts positively to the signal accompanied by food and negatively to the similar signal unaccompanied by food.

CONFLICT

The next step in the production of the nervous state is the conflict between the signal for the positive activity (excitation) and the negative (inhibition). This may be carried on to the point where the dog is unable to react correctly, to make a differentiation. For example we may use two tones so close together in pitch that the nervous system is physically incapable of discriminating—say 1000 as signal for food and 1012 as signal not accompanied by food. I shall omit discussion of the theoretical considerations—whether the correct explanation is a physical one of overlapping of cortical processes of excitation and inhibition, or whether the conflict is based on a more highly organized psychobiological level, such as is indicated by "frustration." The essential element seems to be a difficult situation based upon a strong excitation.

Many other methods may be used, involving in general either a natural emotional shock (intense fear, fights, etc.), a difficult change in routine, or conflicting stimuli leading to opposite reactions.

ACUTE CONFLICT

The behavior of any dog can be upset temporarily by such a conflict as described above. This is expressed in his general behavior (restlessness, etc.), by a loss of equilibrium between all the CRs (changing the relative intensities, *e.g.,* over-reacting to some, under-reacting to others), and finally, as we have been able to show recently by records of the heart rate and respiration, in emotional changes.

Acute Breakdown

An incipient nervous imbalance may be detected by measuring the departure from normal in certain autonomic responses—in the secretion, the cardiac frequency, the character and rate of respiration, the sexual reflexes under constant stimulation. In order to detect an abnormality one must first establish the normal laws governing each one of these functions. This I have done for the secretion and the heart rate. Regarding the salivary secretion I have determined that the relation of the conditioned salivary secretion to the strength of unconditioned stimulus (amount of food) is an exponential function; the conditioned reflex can now be expressed by a formula, viz.,

$$CR = a + b\ (1 - e^{-cQ}),$$

where a, b, c are constants for a given dog, e the base of natural logarithms, and Q the quantity of food (Chart I). If there is a departure from this formula in the salivary secretion, we have an indication of a nervous disturbance. In the following dog (Kompa) the effect of introducing a new and undifferentiated stimulus is seen on the other conditioned reflexes. They fall to zero soon after the new (confusing) stimulus (M_{144}) is given; they gradually return to normal size during a period of 10 minutes or more (see Chart II).

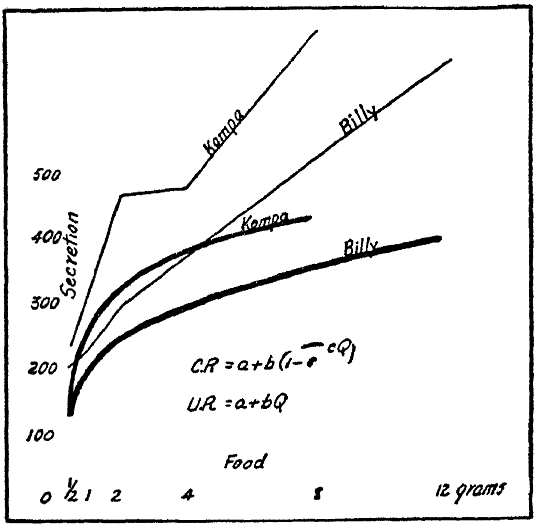


Chart I

The heart rate, as has been shown in my laboratory, bears a quantitative relationship to the intensity of the conditioned stimulus and to inhibition: it is larger for a signal denoting a large amount of food than it is for a signal which has habitually accompanied a small amount of food, and there is still another rate for an inhibitory stimulus. This has been established for both painful and food stimuli (Chart III). With a difficult differentiation, a situation which the animal cannot solve nor escape from, these normal relations of the cardiac reflexes become exaggerated or chaotic as can be seen in the following dog. A comparison of the heart rates in this dog in December when he was able to differentiate and in January when a new stimulus was introduced which he could not differentiate shows the accompanying change in the heart rates.

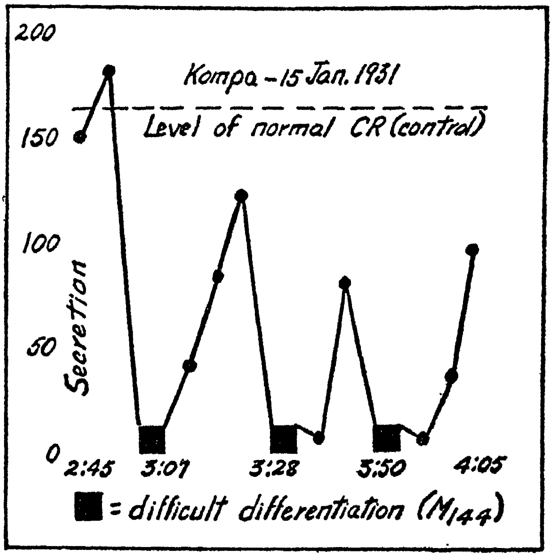


Chart II

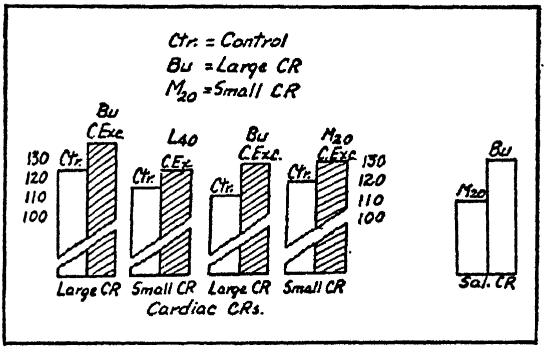


Chart III

The next charts illustrate the respiratory changes accompanying good differentiation, as compared with the irregularity and upheaval in the respiration in the same dog before differentiation is accomplished (Charts IV and V).

Similarly a single introduction of a new stimulus, *e.g.*, a flashing light for 10 seconds, may cause in susceptible dogs a profound effect on the sexual reflexes measured soon after the use of this disturbing light. The following chart shows how the sexual reflexes were reduced for several days (finally to zero, gradually returning to normal) by such a disturbing stimulus though it was used only twice (see Chart VI).

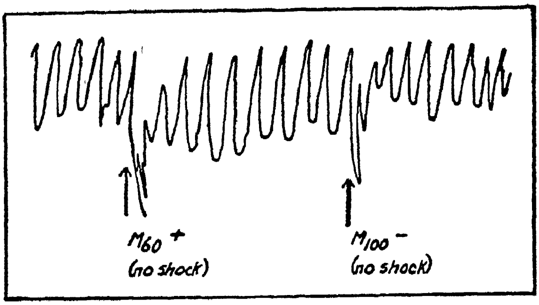


CHART IV

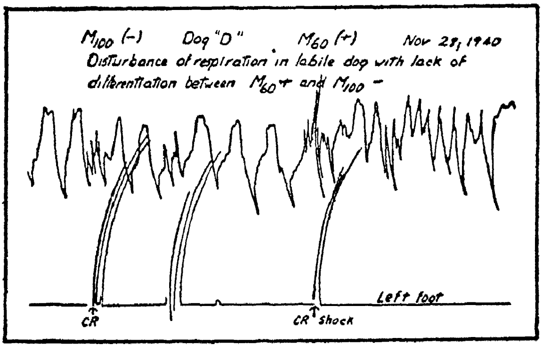


CHART V

In certain animals such a temporary imbalance may become chronic. The two chief factors seem to be (1) the constitution of the individual, and (2) the severity of the conflict.

CONSTITUTION

Whether an animal will show a permanent disturbance under strain, as well as the extent of the disturbance in behavior and in the autonomic system depends upon the stability of the animal. Three animals were subjected to identical situations of conflict—the differentiation of two tones of 1012 and 1024. All three showed temporary disturbances. One of these developed a chronic and apparently incurable neurosis, while the other two could be promptly cured by appropriate means.

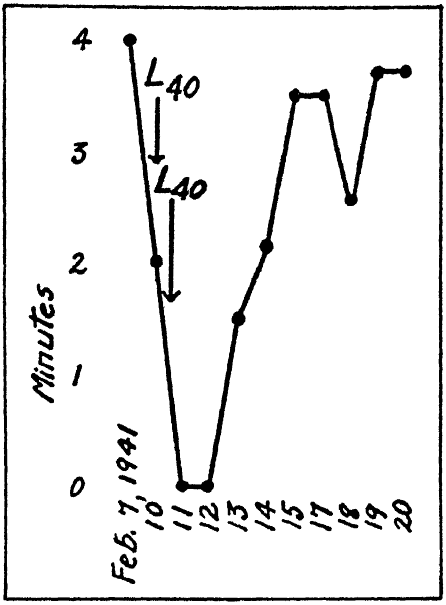


Chart VI

Development

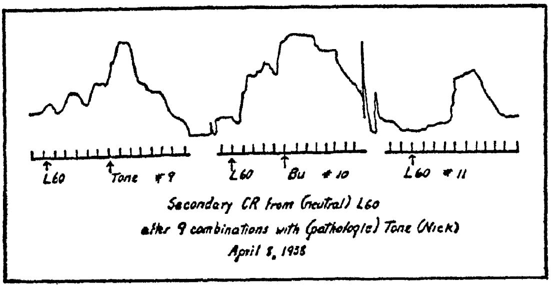
The pathological animal showed not only an acute disturbance, but a series of developments which have continued for a period of nine years since the original conflict. The animal was subjected to the difficult differentiation for several months in 1932; bringing him into the experimental environment since then has apparently been sufficient to induce the spread of the neurosis to new physiological systems ("Nick").

General Behavior

The food excitation passed over into one of defense, characterized by resistance to being brought into the environment and panicky fear reactions of a severe degree.

The animal exhibits all the symptoms to a former signal for food that an ordinary dog does for actual pain, viz., whimpering, howling, retreating, rapid panting, tachycardia.

Any new element brought into the old environment and closely associated with it acquires the function of producing the nervous state. Thus not only the conditioned signals originally used in the environment, but any new one introduced even after several years during which there has been no actual conflict, may acquire the property of bringing on all the symptoms. For example, a flashing light, which had never been used before and which was without effect the first time employed, after 8–10 combinations of light with tone, evoked almost the identical responses as the tone itself (Chart VII).



Secondary CR from (neutral) L60
after 9 combinations with (pathologic) Tone (Nick)
April 8, 1938

CHART VII

GASTROINTESTINAL SYSTEM

The environment and particularly the specific stimuli used exert an inhibitory influence on all the conditioned food reflexes. The secretion of saliva to food is inhibited. It is safe to assume that also the gastric secretion and the pancreatic, which is initiated by the gastric secretion, as well as the concomitant expulsion of bile, suffer in the same way. It is important to note, however, that the secretions which are not dependent upon the cerebral cortex are not inhibited, such as the unconditioned reflex and chemical secretions.

RESPIRATION

Two years after the original conflict the animal began to show (1) a respiratory tic when he was brought into the environment or even approached it (this consisted in loud, raucous, and prolonged expirations and inspirations); (2) marked changes in respiration followed any of the signals used in the original environment, or (3) even those which were later associated with it, as shown in Chart VII.

HEART RATES

In the experimental environment the heart rate is constantly elevated, ranging between 130 and 205, with exacerbations when any of the original signals are used (Chart VIII). When this dog was removed from the experimental laboratory to a farm life his heart rate dropped about 50 per cent (95 to 130). A normal dog shows a slightly increased heart rate during the CR for food—from about 110 to 125.

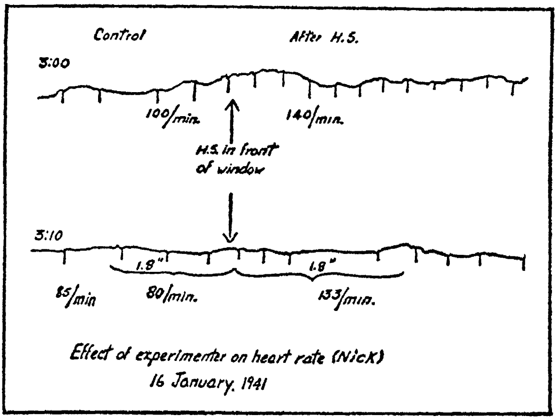


Chart VIII

Micturition

Intractable pollakiuria is present in the experimental environment, beginning about two years after the conflict, sometimes as much as thirty times in an hour. It is extremely rare that a normal dog urinates in the experimental room or on the stand, even though he may be kept there for 7 hours or more. However, one of the most neurotic of our dogs begins urinating frequently anywhere and everywhere in the environment of conflict, and even aggressively, on the same type of food which was used 5 years previously to produce the conflict. One might easily draw a parallel here to the enuresis of nervous children.

Sexual Reflexes

Reciprocal relations have been noted in several neurotic dogs between the sexual excitation and the anxiety state described above. Normal sexual relations had a temporary dissipating effect upon the neurosis. Secondly in the experimental environment neurotic dogs show, on the one hand, frequent and almost constant erections reactive to the environment and particularly the specific signals formerly connected with food and the difficult problem, sexual erections appearing within a few seconds after a conditioned signal. On the other hand, a condition of ejaculatio præcox is seen in the environment of conflict during adequate sexual stimulation. In normal dogs the working environment has no effect upon the onset and duration of erection to normal stimuli, while in this animal the onset and duration were decreased by the environment to about one-third of what they were outside the environment.

SOCIAL RELATIONSHIPS

The presence of the observer also has a temporary dissipating effect upon the anxiety-like state. The dyspnea disappears, the animal is quiet, and the fear reaction may be completely abated, or delayed until the human companion leaves the room. The close proximity and especially petting by almost any human subject has this beneficial effect whereas the presence of another dog, except for special "friends," does not have this specific effect (Chart IX).

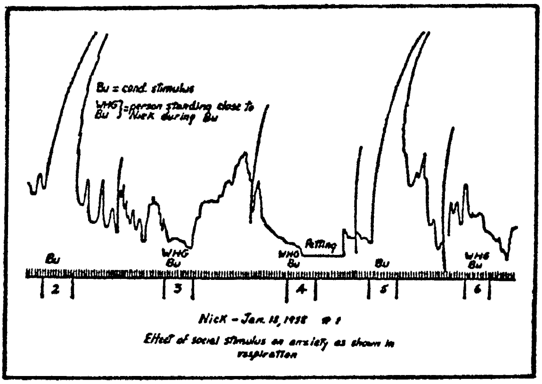


CHART IX

ACTIVITY

The 24-hour activity of the animals which have become neurotic does not differ in amount from the normal—it may be either exaggerated or diminished, depending upon the type of dog. However we have shown that an interesting correlation in activity exists between normal dogs that is not present between the neurotic and the normal dogs. Thus the normal dogs show parallel fluctuations in their activity when placed in adjacent cages, but the activity of the neurotic dog is independent of those surrounding him, to the extent that there is no positive correlation.

THERAPY

A pronounced improvement was obtained by removal of the dog to an entirely new environment—to a farm. The improvement could not be obtained by 18 months' rest in the laboratory environment, even though the dog was not brought down into the experimental room in that period. After two months in the country in 1937 the dog showed a marked improvement—diminished heart rate, quieter respiration, less whining and defense reactions, less pollakiuria. This condition lasted for several weeks after the dog was returned to the laboratory environment, but in that environment the symptoms gradually reappeared. The following 3 charts show: the respiration before rest in the country (Chart X), one day after his return to the laboratory (Chart XI) and two weeks and six months later (Charts XII, VII and IX).

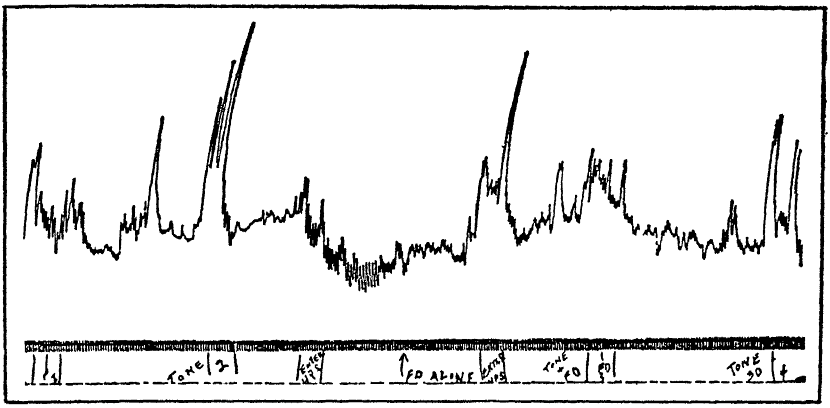


Chart X.—Changes in respiration on May 25, 1937, to pathological stimulus, tone. (Dog Nick.)

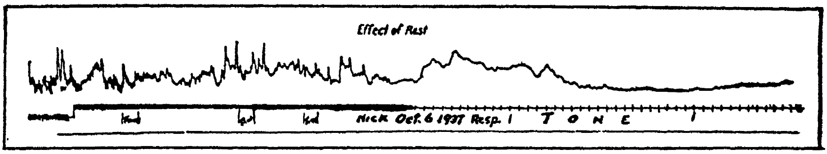


Chart XI.—Showing effect of rest in country on respiratory reaction to pathological tone one day after return of Nick to laboratory.

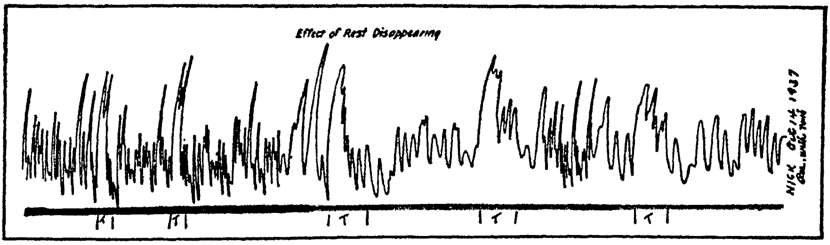


Chart XII.—Showing reappearance of pathological respiratory reaction to tone on Oct. 14, 1937, two weeks after return of Nick to laboratory.

A longer rest in the country, 18 months (1939–40) had a greater effect in reducing the abnormal symptoms. While on the farm he gradually became almost normal except for a few relapses. After returning to the laboratory in January 1941 this neurotic dog (Nick) has shown a great improvement, though almost all of his old symptoms reappeared in the experimental room, but in a lesser degree. Chart XIII illustrates the effect of rest on the sexual reflexes.

Other attempts to modify the environment had only a temporary effect. One of the measures used was transformation of the environment from unpleasant to pleasant by giving him all of his daily rations for several months in the experimental environment and none outside; this had an ameliorating result only during the period that the dog was being fed there.

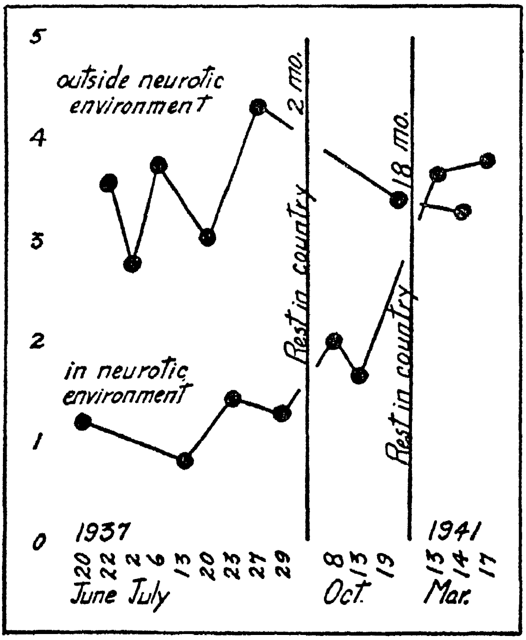


CHART XIII

CONCLUSION

The most striking features in this study have been the importance of the individual and the extension of the effects of the conflict for years after its original use as well as the extension to new systems later during the life of the dog.

The most important therapeutic indication is the detection of susceptible animals by measuring the reactions under strain, and preventing the progress of the strain to that point at which a permanent breakdown occurs. Once the disturbance is thoroughly established, therapy is difficult. Improvement has been seen with a complete change of environment—removal to farm life for 18 months. Rest in the environment of conflict was unavailing.

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THE EFFECTS OF INFANT FEEDING-FRUSTRATION UPON ADULT HOARDING IN THE ALBINO RAT*

by

J. McV. Hunt

Brown University

For a considerable time psychologists, psychiatrists, psychoanalysts, and some anthropologists have attributed large importance to the experiences of infancy and childhood in determining the personal characteristics of adult human beings. In general these early experiences, along with hereditary predispositions, are considered to determine the manner in which the individual reacts to later trials and frustrations, and to supply underlying tendencies to adhere to certain values and practices rather than others. They are also found to be of importance in determining such characteristics as intelligence-test scores, but it is not this aspect of behavior with which we are immediately concerned.[1]

At the present time two lines of evidence indicate that early experiences are important for adult personality. The first comes from psychoanalysis. The analyst finds the dreams and free associations of his subjects leading into their biographical pasts, where, by means of his rules of interpretation, he derives a plausible and to many a satisfying explanation of adult personalities from the experiences of feeding, toilet training, genital behavior, and social conflicts within the family. His rules depend upon the postulate that these free associations lead to the real determinants of adult behavior. Some certainty concerning the evidence from this method derives from the fact that certain marked similarities appear among the implications of the free associations and dreams of those of similar personality—especially of similar neurotic personality.

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[1] I refer to the work of Wellman and her associates. While this evidence is under dispute, it has the methodological advantages lacking to psychoanalytic studies and anthropological studies, namely, that controlled groups of individuals are provided, and one is submitted to a determining experience before the effect is observed. For critical examination and bibliography of this evidence, see: Q. McNemar, A critical examination of the University of Iowa studies of environmental influences upon the I.Q., *Psychol. Bull.*, 1940, 73, 63–92. For the reply of these investigators, see: B. L. Wellman, H. M. Skeels, and M. Skodak, Review of McNemar's critical examination of Iowa Studies, *Psychol. Bull.*, 1940, 37, 93–111.

The second line of evidence comes from the comparative study of primitive cultures, especially when this method is supplemented with psychoanalytic insights. Tribes using relatively similar practices in nursing, weaning, toilet training, etc., appear to have similar, typical personalities even though the geographical circumstances in which they live might appear to dictate different types of personalities. The Arapesh of New Guinea are generous, cooperative, and peaceful, in spite of the fact that they live on unfertile mountainous land and seldom have ample food. The Pitchentara of Central Australia are generous, often fatally optimistic, and do not hoard food even though they live in a land of frequent famine. From the anthropological reports, it appears that both of these tribes are accustomed to provide infants with frequent and affectionate nursing. Crying is answered with immediate suckling. Weaning is late; and, among the Pitchentara at least, little attention is paid to toilet habits, and children are not expected to be clean. On the other hand, the Normanby Islanders, although they live where food is abundant, are dominated by the desire to collect large stores of food. They are competitive, and frequently quarrelsome. Their children, however, are nursed briefly and without affection. The Mundagumor, a people of the same race as the Arapesh, who live on fertile lowlands of New Guinea, are arrogant, aggressive, impatient, and quarrelsome in the extreme. These Mundagumor nurse their children standing up for very brief periods, treat crying with slaps, and not infrequently permit their children to die from neglect. While such data are still meager, these instances are merely samples.

Although both these lines of evidence are important, three defects are evident in their nature. First of all, one observes the resultant and looks backward for the determinants. They lack to a large degree the predictive aspect which is desirable in scientific evidence. Secondly, an investigator has little or no control of other factors which might also operate in determining the observed characteristics. Thirdly, seldom is there any way to supply a control-group wherein the conditions under consideration are definitely absent.

In assaying the efficacy of the experiences of infancy delineated by psychoanalysis for determining adult personality, it would be highly desirable from a scientific standpoint to rear human beings under controlled circumstances. Since such possibilities are out of the question for social and humanitarian reasons, one is left with the alternative of working with lower animals.[2] If the experiences considered important by psychoanalysts belong among fundamental biological processes, their effects should be demonstrable upon lower animals as well as human beings. To be sure, there is a danger of over-simplification. One cannot hope to duplicate the complex habit hierarchies involved in the socialization of the human beings. But this very simplification may well serve as an advantage in enabling the investigator to lay bare the essentials. Investigators using animals have already had some success in producing analogues of such dynamisms as regression, reaction-formation and possibly projection.

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[2] An exception here might be the study of adolescent personalities of children reared in orphanages using contrasting practices of feeding, weaning, and toilet training. Another exception can be found in the studies of infantile sucking by M. A. Ribble.

Studies controlling the experiences of animals relevant to our problem during their development have hardly begun, but we have already Levy's studies of instinct satiation: sucking in dogs, pecking in chicks. The present paper describes a preliminary investigation of the effects of feeding-frustration during late infancy upon the hoarding behavior of adult rats. It was inspired by the hypothesis formulated by Money-Kyrle from a survey of the evidence furnished by the comparative study of primitive cultures. "Free feeding and late weaning would seem to promote generosity and optimism. Oral deprivation and early weaning would seem to promote stinginess and greed." Feeding was chosen because it is the simplest factor to control in animal work. While food-storing in rats is a long cry from stinginess and collecting in human beings, it is nicely measurable, and can be produced at will with a relatively slight amount of food deprivation at any time, as has been shown by Hunt and Willoughby and by Wolfe. The rat was chosen because it is a convenient laboratory animal, with a brief life-cycle.

The specific questions in this investigation were two: (1) Will a period of feeding-frustration during infancy alter hoarding behavior in adulthood; and (2) Does the age of the animals at the time an infantile feeding-frustration occurs determine the degree to which the hoarding behavior in adulthood is affected? This latter question is important in view of the current belief that frustration-tolerance increases with age.

THE METHOD

To determine whether feeding-frustration in infancy alters the hoarding behavior of adult rats, we have compared the numbers of pellets stored, both before and after 5 days of relative hunger in adulthood, by animals which had been submitted to 15 days of feeding-frustration during late infancy with the numbers of pellets stored by their litter-mates which had been allowed unlimited food continuously. Both experimental animals and controls were otherwise allowed unlimited food. To determine whether the age of the animals at the time of the infantile feeding-frustration determines the degree to which hoarding behavior in adulthood is affected, we began the infantile hunger period at 24 days following birth for one group and at 32 days following birth for another group. The schedule of this experimental procedure appears in Table 1, but it will be described in some detail.

Four litters of albino rats from the laboratory colony (derived from Wistar stock) served as subjects. Two litters (5 females and 2 males, 4 females and 3 males) born on July 15, 1939, served as the 24-day group, and 2 other litters (4 females and 3 males, 6 females and 2 males) born on June 16 served as the 32-day group.[3] All litters were weaned at 21 days of age, and they were allowed unlimited food until the experimental feeding began.[4]

The experimental animals and the controls for both the 24-day group and the 32-day group were selected by what might be called the "method of split litters." Preparation of the 24-day group began the day following weaning, and of the 32-day group 8 days later when they were 29 days old. In both cases, the 2 litters constituting each of the groups were divided randomly, so that litter-mates served as experimental and control animals, and the numbers of males and females in the experimental and control groups were as nearly equal as possible. Ear-marks on each animal identified it according to litter and individually throughout the experiment. Experimental animals and controls of each group were segregated in separate cages to make four cages in all. All animals were weighed individually at the beginning of the experiment and on alternate days through the 15-day periods of feeding-frustration and for another 15 days following.

The feeding-frustration to which the experimental groups were submitted consisted of 10-minute group-feedings of wet mash at irregular intervals varying from 9 to 36 hours for 15 days. Thus controlled were time-of-eating and time-between-feedings. To minimize inanition, any animal failing to gain or falling in weight distinctly below its litter mates of the same sex was given extra individual feedings; so, even though the animals were ordinarily fed as groups, the intervals between feedings varied for these animals. Care was taken that every animal in both the experimental groups hungered once for 36 hours (starting second day of experimental feeding) and twice for 24 hours, and the same feeding-schedule was followed for both groups. Wet mash was available continuously in the cages of the controls.

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[3] In the abstract of the paper presented before the American Psychological Association (*Psychol. Bull.*, 1940, 37, 487–488) these 2 groups were labelled 21-day group and 28-day group respectively. Such was the plan of the experiment, but since some time was involved in preparing the animals, so that the actual feeding-frustration began on the 24th and the 32nd day following birth, these days are more appropriately used as the labels in this paper.

[4] Purina Dog Chow was the only food used in this experiment. As occasion demanded, it was given in the form of pellets or as wet mash. This preparation has proved an adequate, qualitative diet for rats.

TABLE I

Schedule of Experimental Procedure

DAYS AFTER BIRTH		EXPERIMENTAL ANIMALS	BOTH GROUPS	CONTROL ANIMALS
24-Day Group	32-Day Group			
21	21	Unlimited food	Weaned	Unlimited food
22	30		Division of litters, marking and weighing	
24	32	Infantile feeding frustration (15 days)	Weighed individually on alternate days	Unlimited food
39	47	Return to unlimited food		Unlimited food
54	53		Sexes segregated	
			Weighed individually semi-weekly; sex behavior observed	
84	83		Caged according to weight and unlimited food	
			Weighed individually each month	
201	200		Individually caged in hoarding apparatus; unlimited food	
210	209		Hoarding measured while satiated (3 trials) (pre-frustration hoarding)	
213	212		Adult feeding-frustration (5 days); food weighed on last 2 days	
218	217		Hoarding measured again (4 daily trials) (post-frustration hoarding)	

Following the 15 days of feeding-frustration, unlimited quantities of wet mash were made available in the cages of the controls.

Likewise following the 15 days of feeding-frustration, unlimited quantities of wet mash were made available in the cages of the experimental animals. They remained in their original cages and received as groups the same treatment as the controls for 15 more days, when the sexes were segregated. Then they were weighed only every fourth or fifth day for another month. During this month the observer watched for homosexual behavior and examined the vaginas of the females at each weighing to determine whether and roughly to what extent the feeding-frustration had delayed puberty. At the end of this month, when the 24-day group was 84 days old and the 32-day group was 83 days old, the animals were re-sorted according to weight, and experimental animals were caged with controls. These were then returned to the colony room where unlimited food in the form of pellets was continuously available.

Early in January of 1940, approximately 5 months following the end of the infantile feeding-frustration, the animals were segregated in the individual living cages of the hoarding apparatus. There they lived with food-pellets continuously available for 9 days to get them accustomed to the cages and to segregated life.

To determine whether the experimental animals differed from the controls under conditions of satiation, they were given an opportunity to hoard pellets for 30 min. on each of 3 successive days (pre-frustration hoarding). Ordinarily, as our observations and those of Wolfe have shown, satiated rats will not hoard food, but we measured the hoarding at this time to determine whether the infantile feeding-frustration had any effect upon satiated rats.

Following the pre-frustration hoarding tests all animals, experimental and control animals of both groups, were submitted to a subsistence diet for 5 days (adult feeding-frustration). On each of the first 2 of these days every animal was given 2 large pellets (1 in. by 1 in by ½ in.). On the last 3 days each animal was allowed to eat for 30 min. from a glass coaster of wet mash. As an afterthought, on the last 2 days the coasters were weighed at the beginning, after 10 min. of eating, and again after 30 min. of eating to obtain a rough measure of the speed of eating and to measure the total amount of food eaten.

After this adult feeding-frustration, each animal was again given an opportunity to hoard pellets for 30-min. trials on 4 successive days, or until the hoarding had nearly ceased (post-frustration hoarding). During this period the animals were allowed to keep enough pellets to serve as an unlimited food supply through the subsequent 24 hours. The number of pellets hoarded each day by each rat was recorded. This constituted the experimental procedure.

The Hoarding Apparatus

Since the experiment required individual measures of hoarding, and 29 animals were involved, an apparatus was designed which permitted working with 10 animals at a time.[5]

The living cages of this apparatus were constructed in units of 5 cages with common partitions. The walls were of 10 in. by ½ in. pine board; the floors were of ½ in. wire mesh to allow droppings to fall through into a galvanized iron tray. The tops were of ⅜ in. mesh. A unit measured 40 in. long, 10 in. wide, and 10 in. high. Each living cage within a unit was 7⅜ in. by 10 in. by 10 in. The rats lived on the bare wire-mesh floors. Openings of 4 in. by 4 in. were cut in one side wall of each unit 1 in. above the bottom edge and centered between the partitions separating the individual cages. Strips ½ in. by ⅜ in., grooved along the inner edges, were nailed at the bottom and on the 2 sides of each of these openings as sliding retainers for 4½ in. by 5 in. plates of galvanized iron that served as doors. An extension of the iron at one end of each plate answered as a door-handle. Except that they were darker than desirable, these living units served well. Front walls of heavy wire mesh would improve them. The six units employed in this experiment usually stood on their trays in a rack. They were easily lifted from this rack to the table supporting the hoarding alleys. (See Fig. 1.)

The two units of 5 hoarding alleys, equal in total width to the length of the cage-units (40 in.), were partitioned with pine boards (10 in. by ½ in.) so that each alley was the same width as an individual cage. A piece of prestwood ¼ in. by 40 in. by 40 in. floored each unit of five alleys. One end of each unit was closed with a pine board 10 in. by ½ in. by 40 in.; the other end was left open so that a unit of cages could be adjusted to it to make an alley for each cage. Framed, wire-mesh covers for each unit kept each rat in its own alley. These units of alleys were supported on blocks, so that the floor of the alleys was ½ in. below the openings of the cages, to make a low threshold between the cages and the alleys.

In measuring the hoarding, a unit of cages in which rats had been living and from which all food had been removed was adjusted at the open end of a unit of alleys. The doors to the cages were opened, allowing the rats free access to the alleys and to a can of pellets placed at the opposite end of the alley 39 in. away. A trial consisted of 30 min. in this situation, after which the number of pellets stored in each cage was counted.

To facilitate counting the pellets, an illuminating platform was con-structured consisting of a tray of galvanized iron like that used to collect droppings, covered with a slab of plate glass ¼ in. thick papered on the under side. The unit of living cages rested on this platform, and within the platform a string of small red bulbs, like those used on Christmas trees, could be turned on at will to give from beneath a soft light ample to see the pellets stored in the cages. These were turned on every 10 min. during each trial for a period long enough to count the pellets. Though this soft illumination did not appear to disturb the animals, it was thought best to leave the cages in their customary darkness as much as possible. Since the rate of hoarding proved of no significance, in another experiment one would need count only at the end of a 30-min. trial.

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[5] I am especially grateful to my colleague, Harold Schlosberg, for the major portion of the design of this hoarding apparatus and for assistance in measuring the hoarding. His part in this experiment deserves more than this mention.

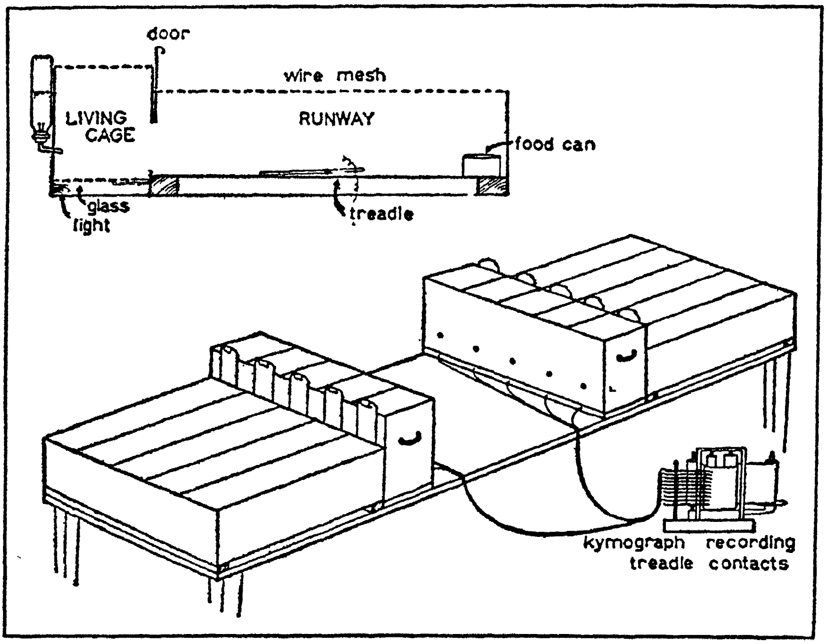

Fig. 1

In order to obtain a rough measure of the activity of the animals during the hoarding trials, and originally to obtain automatically a record of the hoarding, hinged treadles of prestwood were installed midway in the floor of each alley. As a rat passed over this treadle, it tilted the lever and made an electrical contact which recorded on a waxed-paper kymograph. Since the rats made many trips back and forth in the alleys without hauling pellets, however, this device proved of no use as a record of hoarding, and the activity measures proved insignificant. On the whole, the apparatus was quite successful. It was possible to put all 29 animals through a 30-min. hoarding-trial in about 2 hours.

RESULTS

The results will be presented in a chronological order following the order of procedure.

(1) *Inanition effects.* In spite of our efforts to minimize them, inanition effects were observable, as might be expected from the work of Biel, Evans and Bishop, Slonaker and Card, and Stone. The weights of the experimental animals fell considerably below those of the controls during the 15 days of feeding-frustration and continued below for between 3 and 4 months following it. These differences in weight became progressively less until for the 24-day group they disappeared by 106 days following the end of the infantile frustration. (See Table 2.) They never disappeared entirely from the 32-day group, but when the hoarding trials began, 138 days after the infantile feeding-frustration, they were no longer significant statistically. In the light of hoarding results below, it is interesting to note that the differences in weight disappeared sooner in the 24-day group than in the 32-day group. Parenthetically, it may be noted

TABLE 2

MEAN WEIGHTS (GRAMS) OF EXPERIMENTAL AND CONTROL ANIMALS AT THE BEGINNING, DURING, AND AT THE END OF THE 15-DAY PERIOD OF INFANTILE FEEDING FRUSTRATION, AND AT VARIOUS INTERVALS FOLLOWING IT

TIME	24-DAY GROUP				32-DAY GROUP			
	MALES		FEMALES		MALES		FEMALES	
	Expr.	Contr.	Expr.	Contr.	Expr.	Contr.	Expr.	Contr.
Beginning	52.0	52.0	48.0	47.2	77.0	75.0	65.8	69.0
6 days	51.0	55.0	44.5	49.0	74.0	89.3	63.6	81.8
10 days	64.0	71.0	48.3	63.4	78.5	98.3	66.8	91.8
End	65.0	85.0	53.3	74.6	88.0	113.7	74.0	105.4
10 days	114.0	135.0	93.5	110.4	134.5	148.0	100.6	123.2
30 days	187.0	199.0	137.0	151.6				
58 days	218.7	235.5	153.0	165.0				
76 days	254.0	264.0	169.7	176.4				
106 days	284.0	289.0	183.0	184.0				
154 days	313.3	313.5	192.5	193.4				
175 days	321.6	320.0	201.0	197.0				
24 days					169.0	214.3	133.8	150.0
52 days					210.5	214.3	150.0	164.0
72 days					237.5	241.7	164.6	180.0
117 days					298.0	297.3	190.8	203.8
138 days					304.0	301.0	197.8	205.0

that, although these animals derived largely from Wistar stock, the weight differences between males and females are considerably larger than those recorded by Donaldson for animals of this breed, and the weight curves of the controls also differ from Donaldson's considerably.

Besides falling below the controls in weight, the experimental animals reached puberty later than the controls. Homosexual mounting appeared about a week later in the experimental males and roughly corroborates Stone's findings. The vaginas of the females in the experimental groups opened about a week later than did those of the controls. In two females of the 24-day group this delay was approximately two weeks. No effort was made to get precise data on these factors. They were observed and recorded only casually as the experimenter weighed the animals following the infantile feeding-frustration to check the possibility that degree of inanition might be related to the amount hoarded later.

(2) *Pre-frustration hoarding.* While satiated rats will not ordinarily hoard food, there was a possibility that those submitted to feeding-

TABLE 3

NUMBERS OF PELLETS HOARDED BY INDIVIDUAL ANIMALS OF BOTH GROUPS WHILE SATIATED PREVIOUS TO ADULT FEEDING-FRUSTRATION

	EXPERIMENTAL ANIMALS				CONTROL ANIMALS			
	Day 1	Day 2	Day 3	Total	Day 1	Day 2	Day 3	Total
24-DAY GROUP								
Litter I								
Males	3	0	1	4	3	0	2	5
Females	0	2	0	2	1	0	0	1
	1	0	0	1	1	0	1	2
					0	0	0	0
Litter II								
Males	1	0	0	1	4	0	1	5
	2	0	0	2				
Females	0	0	1	1	0	0	1	1
	0	0	0	0	0	0	0	0
32-DAY GROUP								
Litter III								
Males	1	0	1	2	1	1	0	2
					2	0	0	2
Females	0	0	1	1	0	0	1	1
	1	0	1	2	0	0	0	0
Litter IV								
Males	2	0	0	2	8	0	2	10
Females	3	0	0	3	0	0	0	0
	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0

frustration in infancy might hoard even while they were well fed. However, in the 3 daily trials of hoarding under conditions of satiation, the numbers of pellets stored were negligible and did not distinguish the groups. It is apparent from the raw data derived from each trial shown in Table 3 that only rarely did any animal store more than 2 pellets during a 30-min. trial. Approximately half of the animals stored no pellets or only 1 in all 3 trials.

In this pre-frustration hoarding the means for the control-groups are even very slightly, although not significantly, larger than the means for the experimental groups.[6] Litter differences were not significant, but males hoarded considerably and significantly more than females. (See Table 4, and also note the solid portions of Fig. 2 and Fig. 3.) It is quite evident from these results that the infantile feeding-frustration to which these experimental animals were submitted did not make them as adults hoard while satiated.

TABLE 4

MEAN NUMBERS OF PELLETS HOARDED BY GROUPS WHILE SATIATED IN ALL 3 TRIALS BEFORE ADULT FEEDING-FRUSTRATION

24-DAY GROUP				32-DAY GROUP			
Exper.	*Contr.*	*F*	*P*	*Exper.*	*Contr.*	*F*	*P*
1.6	2.0	.42	—	1.4	1.9	.15	—
Male	*Female*			*Male*	*Female*		
3.4	.9	13.00	.01	3.6	.7	5.30	.05
Lit. I	*Lit. II*			*Lit. III*	*Lit. IV*		
2.3	1.4	1.15	—	1.4	1.9	.15	—

(3) *Speed of eating and amount eaten during the last 2 days of adult feeding-frustration.* When wet mash was first fed on the third day of adult feeding-frustration, the experimenter thought he observed that the experimental animals ate considerably more than the controls. To test this observation and to determine whether the frustration in infancy had affected the rate of eating, as it might well be expected to do, on the last 2 days he weighed the food eaten during the first 10 min. of each of the eating periods and also that eaten during the whole 30-min. period. The

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[6] Since 3 factors—(1) sex, (2) litter, and (3) the experiment—could contribute to the variance of the hoarding in this experiment, Fisher's analysis of variance as described by Snedecor (Ch. 11) has been used to test the statistical significance of all results. Since each contributor to the variance involves a dichotomy, one degree of freedom in each instance is compared with 10 or 11 degrees of freedom in the error, because there are 14 animals in the 24-day group and 15 animals in the 32-day group.

former measure may be considered to yield a rough indication of the speed of eating; the latter served to measure the total amount eaten by each animal during the last 2 days of the adult feeding-frustration.

During the first 10 min. of feeding on each of these days, the experimental animals of both groups ate more than their respective controls. The differences are not large, but it is interesting to note from Table 5

TABLE 5

MEAN GRAMS OF MASH EATEN DURING FIRST 10 MIN. OF FEEDING ON 4TH AND 5TH DAYS OF ADULT FEEDING-FRUSTRATION

	24-DAY GROUP				32-DAY GROUP			
	Exper.	*Contr.*	*F*	*P*	*Exper.*	*Contr.*	*F*	*P*
4th day	16.0	13.9	1.74	—	14.6	12.6	2.12	—
5th day	16.1	14.5	2.00	—	15.6	14.0	2.01	—
	Males	*Females*			*Males*	*Females*		
4th day	18.8	12.8	12.60	.01	16.8	13.0	5.90	.05
5th day	19.0	13.2	24.90	.01	16.6	13.8	5.47	.05
	Lit. I	*Lit. II*			*Lit. III*	*Lit. IV*		
4th day	13.0	16.9	6.00	.05	13.9	13.4	.14	—
5th day	13.5	16.8	4.66	—	14.9	14.6	.04	—

that they are greater on the fourth day than on the fifth day, and somewhat greater for the 24-day group than for the 32-day group. An increase in the amount eaten by the controls appears to account for this decrease in the difference between the amounts eaten by these groups on the fifth day. Though these differences are not statistically significant, this decrease from the fourth to the fifth day, coupled with the fact that the differences in the amounts eaten by the experimental animals and the controls were noticeable to casual observation on the third day, suggests that the experimental animals ate considerably faster than the controls at first, but that, with only one brief feeding a day, the controls gradually learned to hasten their eating. While these results are not conclusive at all, it appears tentatively that, to motivate animals which have experienced fairly intense hunger to eat at a maximum rate, a shorter period of starvation is required than is necessary for animals which have not previously experienced such hunger. The fact that the experimental animals of the 32-day group ate less than those of the 24-day group, while again barely suggestive, indicates that similar objective infantile feeding-frustrations may produce greater effect upon the speed of eating later in adulthood when they occur during the fourth and fifth weeks following birth than when they occur during the fifth and sixth weeks. It should be remembered that these results were obtained as an afterthought. They are worthy of mention only in the light of the other results described below.

It may also be noted from Table 5 that males ate faster than females. The sex-factor contributes the major portion of the variance in the amount eaten during the first 10 min.[7] Litters I and II also differ significantly (on the fourth day), but litters III and IV do not. These results contrast with those from post-frustration hoarding where sex and litter contribute negligibly to the variance.

When we consider the total amounts eaten throughout these two 30-min. eating periods (see Table 6), it is interesting to note that the experimental animals of the 24-day group ate an average of 5 grams more food than their controls on these days, and that the experimental animals of the 32-day group ate only an average of approximately 3 grams more than their controls. Here again is a suggestion of the relatively greater effect of the infantile feeding-frustration in the 24-day group that is consistent with the other results obtained. It should also be noted that, since the experimental groups both ate more than their controls, the adult feeding-frustration was operationally more severe for the controls.

TABLE 6

MEAN GRAMS OF TOTAL MASH EATEN DURING BOTH 30 MIN. FEEDING PERIODS ON THE 4TH AND 5TH DAYS OF ADULT FEEDING-FRUSTRATION

24-DAY GROUP				32-DAY GROUP			
Exper.	*Contr.*	*F*	*P*	*Exper.*	*Contr.*	*F*	*P*
41.9	36.7	11.30	.01	41.3	38.5	2.08	—
Males	*Females*			*Males*	*Females*		
50.0	33.0	104.10	.001	50.6	34.6	62.20	.001
Lit. I	*Lit. II*			*Lit. III*	*Lit. IV*		
35.3	43.3	22.51	.01	41.3	38.5	1.38	—

(4) *Post-frustration hoarding.* The adult feeding-frustration fully reveals the differential effect of the two sorts of infantile experience. When hoarding was measured following it, the experimental animals of the 24-day group hoarded more than two and one-half times as many pellets as their litter-mate controls, but the 32-day group hoarded slightly fewer

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[7] Since the sex-factor is so important in determining the amount eaten, and unequal numbers of males and of females are found in the experimental and litter sub-groups the sum of the squares contributed by these factors is spuriously altered. In one instance the assignable sum of the squares actually proved larger than the total sum of the squares. To eradicate this spurious factor it was necessary to equate the numbers of males and females within the sub-groups by statistical weighting. It is from these weighted sums of squares that the F-values in Table 5 and Table 6 are derived.

than their controls. The raw data for each day's test and the totals appear in Table 7.

TABLE 7

NUMBER OF PELLETS HOARDED BY INDIVIDUAL ANIMALS OF BOTH GROUPS AFTER ADULT FEEDING-FRUSTRATION

	EXPERIMENTAL ANIMALS					CONTROL ANIMALS				
	Day 1	Day 2	Day 3	Day 4	Total	Day 1	Day 2	Day 3	Day 4	Total
24-DAY GROUP										
Litter I										
Males	11	9	4	3	27	8	2	0	0	10
Females	31	32	2	4	69	4	2	1	1	8
	36	18	1	0	55	7	5	0	0	12
						4	3	0	8	15
Litter II										
Males	8	14	4	6	32	36	3	1	0	40
	9	17	17	2	45					
Females	13	1	4	2	20	9	0	0	0	9
	8	0	5	3	16	0	2	1	1	4
32-DAY GROUP										
Litter III										
Males	10	4	2	0	16	20	10	3	0	33
						11	13	12	1	37
Females	15	14	2	3	34	14	1	0	0	15
	7	2	1	1	11	0	2	1	1	4
Litter IV										
Males	3	4	4	0	11	7	3	1	0	11
Females	8	2	0	1	11	4	26	1	1	32
	7	10	0	0	17	12	0	0	0	12
	4	2	0	0	6	0	0	0	0	0

It is apparent from Table 7, and especially from Fig. 2, that only one of the controls in the 24-day group hoarded more during these 4 tests than did the poorest hoarder among the experimental animals. Three days without water may possibly explain this one overlapping case. When the cages were first set up, a defective tube trapped an air bubble, a fault which was not noticed until the bottles were refilled. Although 12 days had elapsed between this incident and the beginning of the post-frustration hoarding tests, and this animal did not hoard remarkably during the intervening pre-frustration trials, it is possible that due to its recency this thirst experience may have operated in a fashion similar to that in which infancy frustration operates.[8]

The effects of the infantile frustrations appear in two forms. Not only do the experimental animals of the 24-day group hoard more on the first test, but their hoarding extinguishes less rapidly than does that of the controls. An inspection of Table 7 shows that all the experimental animals of this group, but only 3 of their 7 controls, stored pellets on the third day. On the fourth day 6 of the experimental animals and only 3 of the controls carried pellets. Moreover, with one exception, on these days the controls carried only 1 pellet a test, while the experimental animals, with one exception, carried 2 or more. It is probably unfortunate that the tests were stopped on the fourth day, for several of the experimental animals might well have hoarded on successive days to make the results even more striking.[9]

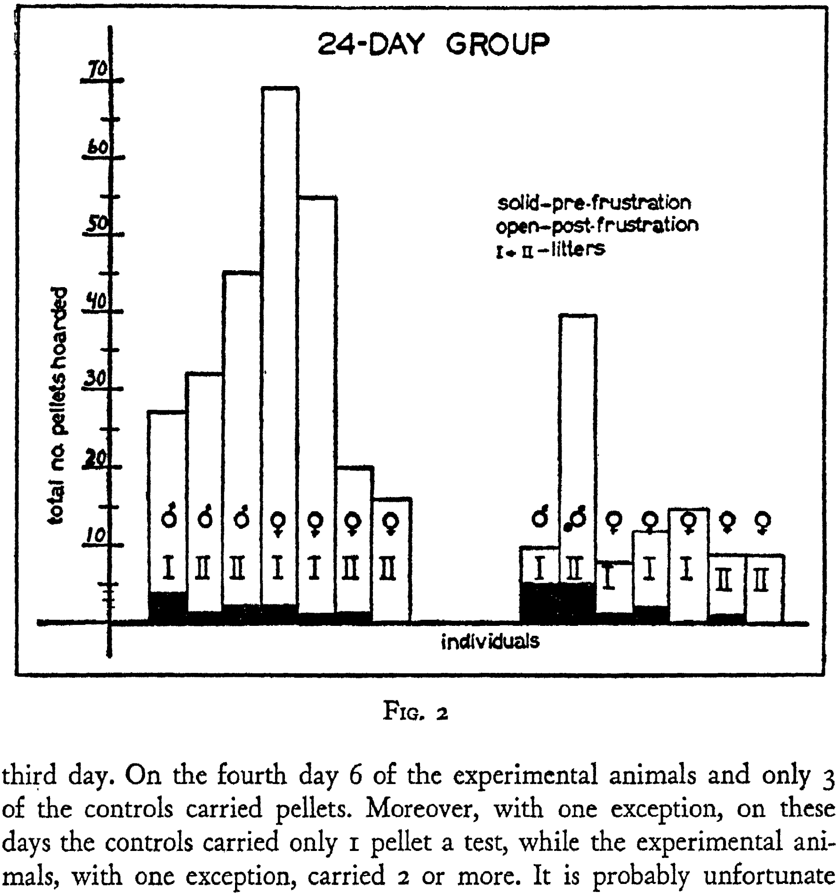

FIG. 2

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[8] A subsequent experiment has shown that rats submitted to water-deprivation will hoard pellets if they are allowed to drink approximately an hour preceding the tests. They will hoard even though they are allowed unlimited food during the water-deprivation.

[9] The behavior of the rats during the first hoarding test following the adult feeding-frustration has some interest. When the cage doors were opened, the animals ran to the food cans, carried a pellet back to their cages, and began to eat. After a few seconds they

TABLE 8

MEAN NUMBER OF PELLETS HOARDED BY GROUPS ON EACH DAY AND ON ALL DAYS AFTER ADULT FEEDING-FRUSTRATION

	24-DAY GROUP				32-DAY GROUP			
	Exper.	*Contr.*	*F*	*P*	*Exper.*	*Contr.*	*F*	*P*
Day 1	16.6	9.7	.92	—	6.0	8.5	.33	—
Day 2	13.0	2.4	8.73	.05	5.4	6.9	.23	—
Day 3	5.3	.4	9.65	.05	1.3	2.3	.68	—
Day 4	2.9	1.4	1.10	—	.7	.4	.21	—
All days	37.7	14.0	6.87	.05	15.1	18.0	.24	—
	Males	*Females*			*Males*	*Females*		
All days	30.8	23.7	.66	—	21.6	14.2	1.42	—
	Lit. I	*Lit. II*			*Lit. III*	*Lit. IV*		
All days	28.0	24.4	.23	—	21.4	12.5	2.31	—

The statistical treatment of these results appears in Table 8, and the means of the various subgroups (sex, litter, and experimental) appear in the open portions of Fig. 3. During the 4 daily tests, the experimental animals of the 24-day group hoarded an average of 37.7 pellets, while their controls hoarded only an average of 14. Sex and litter differences are negligible. Each contributes less than the error to the variance, but the experiment contributes to the variance 6.87 times as much as the error. There are less than 5 chances in 100 that such a result could occur by chance.[10]

In the 32-day group the controls hoarded very slightly more than the experimental animals. None of the differences among the subgroups of this 32-day group is statistically significant. It should be noted that both experimental and control animals in this group hoarded about the same average number of pellets as did the controls of the 24-day group. The infantile frustration appears to have had no effect whatever upon the adult hoarding of these animals. It is surprising that a week's difference in the age at which infantile feeding-frustration is experienced should make so much difference. Perhaps longer periods without food or a

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returned to the alleys, but only part way to the food cans before returning to eat for a few more seconds. Some animals dashed into the alleys five or six times, returning to eat without having got as far as the food cans, before getting a second pellet. It was as if they were in a conflict between a tendency to eat and another to hoard. This procedure was repeated with subsequent pellets until hunger had apparently been reduced; then the hoarders devoted themselves almost entirely to carrying pellets.

[10] Where one is considering 1 and 10 degrees of freedom, an *F*-value of 4.96 yields significance at the 5 per-cent level, and one of 10.04 is required for the 1 per-cent level. This result lies somewhere between 5 per-cent and 1 per-cent levels.

longer period of the same kind of irregular feeding might have increased their adult hoarding, but this problem remains for further study. The results for the 24-day group are fairly convincing, especially when one remembers that the adult feeding-frustrations were less severe for the experimental animals than for the controls.

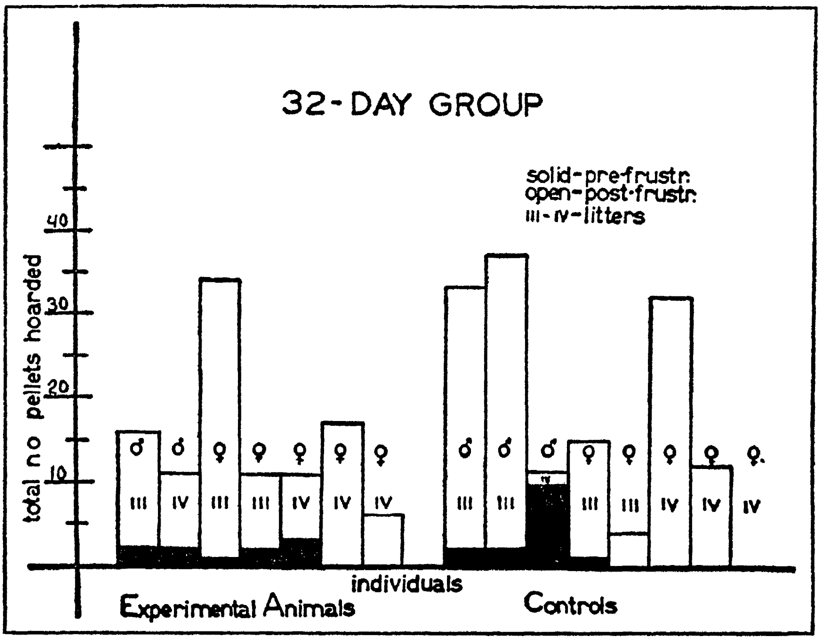

FIG. 3. AMOUNT OF HOARDING BY INDIVIDUAL ANIMALS IN THE 32-DAY GROUP

DISCUSSION

From his studies of food-storing in rats, Wolfe concluded that tissue needs are of major importance in determining hoarding behavior. The present experiment has demonstrated that, while tissue needs undoubtedly set it off, other factors play a large part in determining how much will be hoarded and probably how long the hoarding will last. In view of Wolfe's work, however, one might question whether the degree of inanition during the infantile feeding-frustration may have affected the amount of hoarding. It appears to have had nothing to do with it. For instance, the two experimental animals of the 24-day group which fell furthest below the others in weight and were most delayed at puberty were the two females of litter II which hoarded only 20 and 16 pellets during the post-frustration tests. Moreover, the two experimental animals of the 32-day group that were lightest at the end of the early frustration and remained lightest to the end were the 2 females in litter IV that hoarded only 11 and 6 pellets. Furthermore, it should be remembered that the experimental animals of the 32-day group remained behind their litter-mate controls for a longer period than did the experimental animals of the 24-day group; yet their adult hoarding is not affected. If one can place any confidence in the small obtained differences in speed of eating, this also appears to have been less affected in the 32-day group than in the 24-day group. The fact that the animals which lost excessive weight received extra feedings, and therefore may have suffered less frustration from an organismic standpoint in infancy, may possibly account for their hoarding less than the other experimental animals. At any rate, the degree of inanition, as measured by weight loss and lag in puberty, does not determine the amount of hoarding.

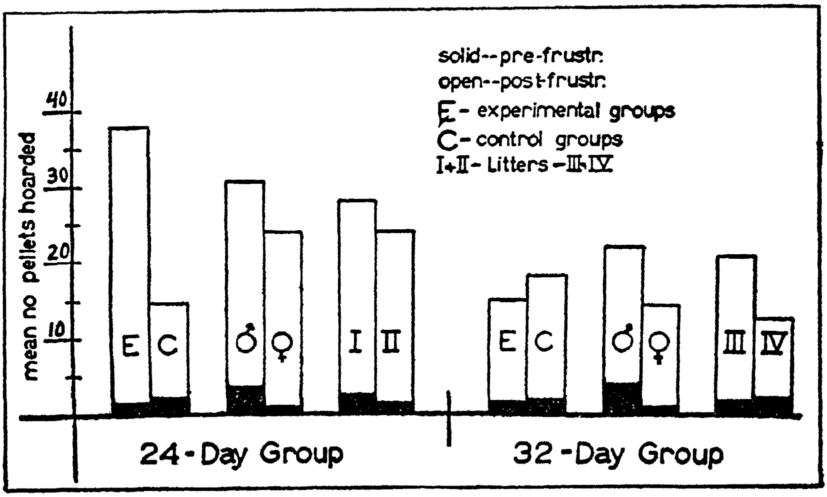

Fig. 4. Average Amount of Hoarding by Subgroups

The problem of hoarding is only a secondary consideration in this study. Though these data contribute to this problem, no claim is made that they solve it.

This study was conducted to get controlled evidence concerning the claims of psychoanalysis that experiences during infancy can affect adult behavior. While one might expect that the traces of infantile hunger would have disappeared from disuse by the time the animals, continuously satiated thereafter, had reached adulthood, the results obtained from the 24-day group demonstrate that they may not; and thus, they tend to substantiate this general claim of psychoanalysis. It is interesting, now, to consider these results in the light of learning theory. Such considerations may help to bridge the gap between psychoanalysis and experimental psychology, and they are useful in the formulation of further attacks on the broad problem of personality formation.

With three assumptions commonly made in one type of learning theory, and one from what is known of the changes in the rate of development in young animals as their age increases, one can tentatively account for these results.

First, if one assumes with Mowrer that internal stimuli may serve as conditioned stimuli, then any mild hunger at all may be conceived to serve as the conditioned stimulus for the more intense excitation which was originally aroused by an earlier experience of more intense hunger. Thus, while the controls in this experiment were reacting only to the mild hunger of the adult feeding-frustration, the experimental animals were reacting to a conditioned anticipatory hunger approximating in intensity that experienced during the infantile feeding-frustration.

This foregoing interpretation also involves a second assumption, namely, that the amount of general excitation present is indicated by the magnitude of an organism's reaction (Mowrer). An early experience of intense hunger may thus be seen to determine the strength of the behavior aroused by a subsequent, mild hunger (operationally defined). This would account for greater hoarding and faster eating by the experimental animals in this experiment.

Thirdly, to explain the fact that the traces of the infantile frustration last in the 24-day group and do not last in the 32-day group, one may assume that the length of time during which a trace will remain active is partly, at least, a function of the amount of excitation aroused or removed by the situation in which the trace is established.[11] Hunger involves the frustration of a basic function, eating, and can undoubtedly produce considerable emotional excitation.[12] So, if the hunger were severe, it might be expected to produce traces that would last a lifetime, as it has in the experimental animals of the 24-day group.

Fourthly, the failure of the effects of the infantile feeding-frustration to last in the 32-day group would imply that they had experienced less emotional excitation from this frustration than did the 24-day group. In this experiment the feeding-frustration was operationally controlled in terms of the time-of-eating and the time-between-feedings. From this standpoint the frustration was equivalent for both groups, but another factor is involved. Living processes decrease in rate with increasing age. Temporal increments of weight relative to total body-weight, for instance, is a curvilinear function. When the infantile feeding-frustration began, the 24-day group averaged only approximately 50 grams, while the 32-day group averaged about 76 grams. (See Table 2.) Thus, a given period without food may well have involved more intense hunger, organismically defined, in the 24-day group than in the 32-day group. The quantitative information necessary for a critical treatment of this point is difficult to assemble, and since one must also consider the complications of a threshold-effect, the problem is best left for consideration when more data are available. The hypothesis stands for what it is worth, and these data appear crudely to confirm it. It provides one testable theory to account for the common observation of clinicians that tolerance of frustration increases with age.

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[11] This constitutes a restatement of the law of effect. It is in line with Hull's criticism of Thorndike's statement of the law (cf. C. L. Hull, Thorndike's fundamentals of learning, *Psychol. Bull.*, 1935, 32, 807–823), but it also follows from Freud's statement of the pleasure principle. "We may only venture to say that pleasure is in some way connected with lessening, lowering, or extinguishing the amount of stimulation present in the mental apparatus; and that pain involves a heightening of the latter." (Freud, S., *A general introduction to psychoanalysis.* New York: Garden City Publishing Co., 1930, p. 311.)

[12] Other terms like *tension, anxiety, effort, expectancy,* etc. would seem to refer to various aspects of this fundamental organismic condition. One can deal with this condition inferentially from measures of behavior, and until its physiological nature is better known, the writer feels that the psychologist had best keep his discussions of this condition on the formal level.

SUMMARY AND CONCLUSIONS

This experiment is an attempt to obtain controlled evidence concerning (1) the importance of infantile experience on adult behavior and (2) the importance of the age at which the infantile experience occurs. A group of rats 24 days old and another 32 days old were submitted to 10-min. feedings at irregular intervals for 15 days, while their litter-mate controls were allowed unlimited food. Then, after 5 months of unlimited food for both experimental animals and controls, the numbers of pellets hoarded by the animals in these groups, both before and after a 5-day period of adult feeding-frustration, were compared.

(1) The infantile feeding-frustration had no effect on the number of pellets hoarded while the animals were satiated.

(2) The effect of infantile frustration on adult behavior was shown by the fact that the experimental animals in the 24-day group hoarded more than two and a half times as many pellets as their litter-mate controls in the post-frustration tests (significant at between 5 per-cent and 1 per-cent levels).

(3) The importance of the age at which the infantile frustration occurs is shown by the fact that the experimental animals of the 32-day group hoarded approximately the same as their controls and as the controls in the 24-day group.

(4) Measures of amounts eaten during the last 2 days of the adult feeding-frustration suggested that speed of eating may have been affected by the infantile feeding-frustration.

(5) Inanition effects of the infantile frustration were ruled out as determinants of the hoarding.

(6) These results tend to substantiate the psychoanalytic claim that infantile experience is an effective determinant of adult behavior, and they are interpreted in terms of learning theory.

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THE ALTERATION OF INSTINCTUAL PROCESSES THROUGH THE INFLUENCE OF CONDITIONED REFLEXES *

by

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For the purposes of later discussion I will briefly review the circumstances surrounding our early attempts at conditioning and will try to show why, at first, we misunderstood the significance of Pavlov's conditioned reflex method.

In 1921 Sutherland Simpson asked me to collaborate with him in the investigation of the consequences of early thyroidectomy in the sheep and goat. He was interested in the effect of thyroidectomy on the growth curve, body temperature, and heart rate, and wished me to attempt to demonstrate mental dullness in these dwarfed animals. Lashley and Franz had, at about that time, employed a three-alley maze in a study of the effect of cortical extirpation on learning in the rat. We constructed a similar out-of-door maze in which either outer alley could be made the cul-de-sac, and found that both sheep and goats easily learned to escape from the starting compartment to the food box where they could eat and see the other animals in the barn through a screen door. We employed, therefore, both the feeding incentive and the gregariousness of our animals to induce them to learn. Except for frequent long pauses in traversing the maze the thyroidectomized animals equalled the learning scores of their twin controls even where the maze problem was made too difficult for either species to solve, for example, reversing the position of the blind alley at every trial.

It seemed paradoxical that, whereas pronounced changes in the functioning of separate physiological systems, such as neuromuscular and cardiovascular, were affected by thyroidectomy, a corresponding effect upon the behavior of the animal could not be shown. The impossibility of demonstrating reliable differences in learning scores between a normal, alert, and active sheep and its undersized, weak, lethargic twin suggested a fundamental defect in the method of maze learning as a precise test of adaptive behavior.

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The decision having been made to continue the investigation, it seemed necessary to find some method for studying behavior which would prove comparable in reliability to the procedures being employed in studying the effects of thyroidectomy on the separate organ systems. Happening at this time to read Pavlov's *Work of the Digestive Glands* I was strongly impressed by the following passage:

"Consequently, in the sham feeding experiment, by the act of eating, the excitation of the nerves of the gastric glands depends upon a psychical factor which has here grown into a physiological one, that is to say, is just as much a matter of course, and appears quite as regularly under given conditions, as any other physiological result. Regarded from the purely physiological side, the process may be said to be a complicated reflex act. Its complexity arises from this, that the ultimate object is attained by the joint working of many separate organic functions. The material to be digested—the food—is only found outside the organism in the surrounding world. It is acquired not alone by the exercise of muscular force, but also by the intervention of higher functions, such as judgment, will, desire. It is by the establishment of this passionate desire for eating that unerring and untiring nature has linked the seeking and finding of food with the commencement of the work of digestion. That this factor, which we have now carefully analysed, stands in closest connection with an everyday phenomenon of human life, namely, appetite, may easily be predicated. This agency, which is so important to life and so full of mystery to science, becomes here at length incorporated into flesh and blood, *transformed from a subjective sensation into a concrete factor of the physiological laboratory.*"[1]

As you may remember, Pavlov gives hints in these lectures of his study of conditioned salivary reflexes which was already under way at that time. Due to the fortunate circumstance that G. V. Anrep was lecturing in this country in 1924 we were able to arrange for him to come to Ithaca. Aided by his advice, we constructed a small conditioned reflex laboratory and prepared to establish salivary conditioned reflexes in sheep and goat. Unfortunately, both sheep and goat secrete continuously from the parotid gland. However, since both of these species adapted themselves easily and quickly to the Pavlov frame we were loath to abandon a method which Pavlov had convinced us was a truly physiological one.

Beritoff had just published in *Brain* two well-illustrated articles on motor conditioning in the dog and this suggested to us that we might secure graphic records of motor conditioned reflexes in sheep and goat. In a short time we had secured our first graphic record of positive and negative conditioned motor reflexes and were prepared to proceed with the study of the effect of thyroidectomy on the conditioned reflex. But in one of the first experiments, in 1927, a sudden increase in the number of daily tests led to a state of persistent agitation in a normal sheep, which rendered it useless to us for further conditioning experiments. From Pavlov's clear description of the experimental neurosis in the dog, as recounted by Anrep, we were convinced that our sheep was exhibiting a similar abnormality of behavior.

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[1] Italics by Liddell.

Although for a time we continued the study of the effects of thyroidectomy on conditioning, we became increasingly preoccupied with the experimental neurosis itself. Since the first sheep to exhibit this condition had been trained for some years in the maze with no sign of behavioral disturbance we became convinced that Pavlov's classical method of the conditioned reflex was not an *impersonal observational procedure,* but a *traumatizing procedure.* We believed that, as a method of training, it might exert upon the nervous system effects essentially similar to the traumatic influence of certain cultural factors in human life.

As our study continued the need for an intimate understanding of the conditioning method appeared more and more urgent and in my own case led to a lessened interest in testing or attempting to modify Pavlov's theory of conditioned reflex action.

Perhaps the most significant feature of the conditioned reflex method is to be found in its monotonous and unsatisfying repetitiveness. The animal, having become accustomed to standing in the Pavlov frame, does so willingly and quietly, and during the experimental period is subjected to trivial and repeated stimuli. Having learned to assume an attitude of alert quiet during the daily test, it is roused to brief conditioned and unconditioned activity by signals which indicate that food or no food, shock or no shock are about to follow. The extremely mild electric shocks applied to the animal's foreleg or the very small amounts of food given following the signals can have but little import for the animal's well-being. The reinforcing agents, shock or food, cannot be thought of as important goals polarizing the animal's behavior. Observations of the responses to these routine unconditioned stimuli (food or shock) give us scarcely more insight into the consequence of a long continued regimen of training in the laboratory than do punctuation marks in helping us to understand the written page.

In the course of months and years of training in the conditioned reflex laboratory a progressive change in the animal's behavior is observed and in our experience this behavior moves toward the pathological terminus which we call the experimental neurosis. This *terminus ad quem* of monotonously repeated conditioned activity within the environment of the laboratory room must be accepted as an essential element in the definition of the conditioned reflex method.

Another fundamental characteristic of the method is the intimacy which develops during training between animal and experimenter. In the course of months or years this intimate relationship alters infallibly, first in the direction of dependence and solicitation, but later toward avoidance or hostility. We believe that this feature of Pavlov's method differentiates the study of conditioned reflex action from investigations in essential physiology. In chronic physiological experiments of long duration the cooperation of the animal must be secured; but, within the limits which the physiologist imposes upon his thinking, intimacy between animal subject and investigator is taken for granted and does not enter into the appraisal of the results of the experiment.

To illustrate the progressive change in the pattern of conditioned behavior during the monotonous repetition of daily training let us begin with an untrained sheep or goat and consider samples of the behavior recorded day by day during a long-continued regimen of motor conditioning. The animal is placed in the Pavlov frame with loops under the limbs which allow of considerable movement but prevent locomotion. The brief induction shocks applied to the forelimb are startling but not painful. For example, equally vigorous attempts to escape from the harness are elicited by the shock to the forelimb of the untrained animal or by a sudden movement of the experimenter when standing near its head. In effect, the response to shock and the startle response are identical at this stage of training.

Early in training the animal is unable to repress bursts of activity not associated with signal or shock. It is not possible to decide without reference to the record of signal and shock whether the movements are conditioned or spontaneous. Behavior in the conditioning environment has not yet become episodic. It does not yet consist of bursts of activity in response to stimulation with intervening quiet. As training progresses the animal's behavior becomes more predictable and impulsiveness gives place to skill. That is to say, the animal comes to stand quietly in the Pavlov frame and at the signal intimating the coming shock to the forelimb it no longer struggles to escape. Instead, it makes a deliberate postural adjustment preparatory to executing a precise series of flexion movements with the member to which the shock is about to be applied. As in Coghill's description of the development of behavior patterns in amblystoma, in our sheep and goats the initial total pattern of escaping behavior leads on to an individuation of the rhythmical flexions and extensions of the single forelimb. It was Professor Coghill who first pointed out to us the pronounced similarity between this development of motor behavior during early conditioning and his own findings concerning the development of the embryonic behavior pattern.

The physiological setting for the skilled performance of the forelimb has altered with the progress of training. At the signal preceding shock a posture is deliberately assumed which frees the forelimb for the movements it is about to execute and as the moment for the shock approaches the repeated flexions increase in magnitude. Following the shock, respiration and pulse return within a few seconds to resting tempo. In a well-trained animal the state of quiet just illustrated may be maintained for as much as two hours. That this poise is maintained at a cost is shown when the experimenter enters the room to release the animal from the harness at the end of the daily test. The increase in heart rate at this moment is prompt and prolonged.

When a level of habitual quiet and skilled response has been achieved the animal comes willingly to the laboratory. The daily period of self-imposed restraint to which the animal is subjected in the conditioning laboratory, together with its relinquishment of initiative and spontaneity within the testing period, we believe, lays the foundation for the pathological outcome of long-continued training. Yet this self-imposed restraint is not of itself sufficient to lead to disturbed behavior. Something more is needed for a pathological outcome and that something more is, in the simplest case, provided by the monotonous repetition of a specific temporal pattern of stimulation involving the trivial but inevitable reinforcement mentioned above. Space does not permit a review of the data accumulated in this laboratory which support the above statement. The extensive studies of O. D. Anderson, recently published in Psychosomatic Medicine Monographs, should be consulted.

Our investigations suggest that there are at least two traumatic factors characteristic of Pavlov's method. First, the monotonous repetition of stimuli according to a fixed temporal pattern, and second, the tensions developed by the animal's self-imposed restraint within the Pavlov frame. The tensions resulting from self-imposed restraint are particularly well shown in attempts to habituate the pig to the Pavlov frame for purposes of motor or salivary conditioning.

Seven years ago George F. Sutherland and I began training a litter of four pigs shortly after weaning, following a predetermined procedure aimed at a gradual encroachment upon their freedom. First they were trained to run on leash and were then introduced singly and sometimes in pairs into a small laboratory room and coaxed to open a food box in order to secure pieces of apple. A door buzzer signalled the delivery of apple into the box while a door bell was a signal that no apple was to be obtained. Now a small pen was fenced off with the food box at one end, provided with an arrangement for delivering pieces of apple into the box from an adjoining room. By this time the pigs readily approached and opened the box at the sound of the buzzer but not of the bell.

The next encroachment on the pigs' freedom was to reduce the dimensions of the training pen and finally to tether the pig in the pen where formerly it had run freely. The reaction to collar and chain within the training pen was two-fold. Attempts to escape being unsuccessful, the pig reacted to the added restraint by lying at the back of the pen with eyes closed, although it might grunt and rock back and forth at the sound of the buzzer. This stage of resistance past, the pig readily submitted to the straps of the Pavlov frame and was prepared to open the cover of the box at the sound of a buzzer, the signal for food, discriminating it from the bell which had been a signal for no food.

In order to discover whether the animal, accustomed to stand in the Pavlov frame without resistance, could restrain tantrum behavior if an electric shock were applied to the forelimb, the ringing of the door bell, the former signal for no apple, was now followed by shock. The animal, ignoring the bell, flexed the leg at the shock but at the same time opened the cover of the food box. There was no outcry and no sign of excitement at the shock itself even when increased in strength.

Since it seemed reasonable to assume that the pig regarded its familiar laboratory room as a place in which to be fed, and that its interpretation of changes or signals occurring within this familiar environment centered about preoccupations with food, it occurred to Sutherland that it might be possible systematically to alter the pig's interpretation of its laboratory environment as a whole.

A test of this hypothesis was made by G. F. Sutherland and Q. F. Curtis. The plan of the experiment was to follow on every day the same regimen of training as to number of signals and time intervals between them. An audio-oscillator supplied a constant musical tone of moderate intensity and when this tone was discontinued for 10 seconds, the period of silence constituted the conditioned signal. A lower tone characterized feeding day and higher tone, shocking day, and these days alternated. Although the pig was confused on the first test of the day, it learned to distinguish between the two days and during subsequent periods of silence on shocking day it squealed and shook the foreleg. During the corresponding 10 seconds of silence on feeding day it held open the cover of the food box with the snout and waited for the piece of apple.

At this point a still further curtailment of liberty was imposed on the pig. If it opened the cover of the food box at any time other than when a signal for food was given, or if it touched the screen fence with its snout, it received an electric shock. This additional restriction was followed by the development of the following abnormal behavior. The pig now disregarded the signal and opened the cover only when the apple fell into the box.

In attempting to re-establish conditioned box opening, no more shocks were given, and the conditioned signal (or period of silence) on feeding day was continued until the pig made the appropriate reaction of opening the cover of the food box. It delayed longer and longer, and during a single experimental period it might not lift the cover for over an hour. Its behavior was now definitely abnormal in that it attacked the food box. Standing quietly with eyes closed during the signal, it began to grunt and squeal and then, with a sudden lunge, charged upon the box, thrusting up the cover with its snout and rapidly sweeping the interior, sometimes missing the piece of apple. Finally, it no longer opened the box at all and, with the cover propped open and pieces of apple dropped in the box following each signal, the pig allowed them to accumulate until the experimenter entered the room to release it, when it would rouse itself and begin rapidly to eat the accumulated food.

As in the case of experimental neurosis observed in the dog and sheep, the animal's behavior in the living quarters showed a marked change from friendliness to irascibility, so that it was no longer to be trusted.

The possibility of habituating the pig to the Pavlov frame having been demonstrated, F. Marcuse and A. U. Moore began a new study with three young pigs for the purpose of establishing salivary conditioned reflexes as in the dog. They found it possible to curtail greatly the laborious procedure formerly adopted. The animal was led almost directly from training on leash into the Pavlov frame and no serious difficulties were encountered in establishing a salivary conditioned reflex comparable in every way to that exhibited by Pavlov's dogs.

Although the pig is much more vocal than the dog while being prepared for the experiment, it is quiet and cooperative, but a simple test shows the potentialities for violent behavior lurking beneath its calm exterior. Loosening or tightening the straps about the limbs or the chain on the neck may elicit an immediate outburst of tantrum. This is another illustration of the compression-chamber-like character of the Pavlov conditioning situation, where pent-up tension will escape through any leak provided.

There is evidence, we believe, of a definite structuring of the animal's psychological space as its stands in the Pavlov frame. This structuring may be thought of as a series of concentric shells encapsulating the animal. Proceeding inward each shell imposes increased tension with decreased freedom. Proceeding outward, each boundary passed means lessened tension with increased freedom. In the salivary conditioning situation the sensitized head and neck are enclosed in the innermost shell, while in the motor conditioning context it is the highly reactive leg which is separately encapsulated. Evidence for such a picture has been independently furnished by W. Horsley Gantt at Hopkins, S. Dworkin at McGill, and our own group.

An experimentally neurotic sheep best illustrates what happens when proceeding inward from pasture to Pavlov frame. The sheep avoids the experimenter in the pasture. It resists being led to the laboratory and seeks to avoid entering the door. It struggles when the harness is being adjusted and may urinate when the shaving brush is applied to the skin in preparing to attach the cardiotachometer electrodes. It flinches when the leg is touched and is further disturbed when the experimenter leaves it to begin the tests. Other illustrations given earlier in this report will be remembered, for example, the cardiac acceleration when the experimenter enters the room to release the animal after its daily test.

In conclusion, we believe that the study of animal behavior by Pavlov's classical method of the conditioned reflex is a separate field of experimental medicine. The student of conditioned reflex action in animals depends upon the results of basic research in essential physiology for devising techniques for sampling the various physiological functions in his conditioned animals, and his relation to clinical medicine, including psychiatry, is an equally close and dependent one.

Pavlov, in attempting to bring all data concerning behavior within the framework of reflex action, was preoccupied with measuring the responses of a single effector organ, the salivary gland, but investigators of the conditioned reflex now seek to follow changes in the patterning of many physiological functions as a consequence of conditioning, and must depend upon the researches in essential physiology for the appraisal of this aspect of their behavioral data. At present we emphasize, perhaps more than Pavlov did, the importance of the case history of the individual animal, particularly since we regard the development of the experimental neurosis as a logical consequence of the fundamental characteristics of Pavlov's conditioning method, the use of which leads to this pathological state. Our close relations with clinical medicine and psychiatry are inevitable when we give due weight to the special intimacy which develops between animal subject and experimenter in the course of months and years of observation. This intimacy seems to us similar in fundamental respects to the rapport between patient and psychotherapist.

Our case for conditioned reflex study as a separate branch of experimental medicine rests too upon a careful consideration of the experimental neurosis. In this abnormal state not only are the animal's physiological functions (cardiovascular, respiratory, gastrointestinal) disturbed, but the relations between the animal and experimenter and the animal and its companions in the living quarters are disturbed also.

SUMMARY

A review of results obtained from our study of motor and salivary conditioned reflexes in sheep and pig have led to the following conclusions. Pavlov's conditioning method is not an impersonal observational procedure but a traumatizing procedure. During the course of prolonged

conditioning the animal's behavior moves toward a pathological terminus —the experimental neurosis. At least two factors play a part in the onset of experimental neurosis, *viz.*, the monotonous and 'unsatisfying' repetition of stimuli according to a fixed temporal pattern, and the tensions developed by the animal's self-imposed restraint within the Pavlov frame.

The intimacy which develops between animal and experimenter during prolonged conditioning must enter into the appraisal of the results of the experiment. Because of the importance of the experimenter-animal relationship and because of the changes in the patterning of many physiological functions as a consequence of conditioning emphasis falls upon the case history of the individual animal. Many such considerations support the position that conditioned reflex study constitutes a separate branch of experimental medicine intimately related not only to essential physiology but to internal medicine and psychiatry.

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AN EXPERIMENTAL ANALOGUE OF "REGRESSION" WITH INCIDENTAL OBSERVATIONS ON "REACTION-FORMATION"*

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I

Two extremely interesting experimental demonstrations of "regression" in the rat have already been published, and it may therefore seem unnecessary to report another instance of this same phenomenon. On the basis of evidence already available, there can be scarcely any question of the reality of regression in human beings, or, as the two studies just cited show, of the possibility of its occurrence in animals well below man in the evolutionary scale. Since neither of these studies, however, was apparently conducted with an altogether satisfactory understanding of the theory of regression as it has been developed clinically, they have served in certain respects to obscure rather than to clarify the fundamental nature of regression and the conditions of its occurrence. The present study represents an attempt to eliminate some of this ambiguity. Although animal experimentation along these and related lines may eventually have something new and useful to contribute to human psychopathology, that day apparently still lies in the future. In the meantime, it would seem to behoove those who look forward to making such contributions to acquire the greatest possible familiarity with those theories and principles that have already been derived from careful clinical inquiry at the human level. If clinical concepts are to be taken over and applied carelessly in animal experiments, the results obtained can be expected to be correspondingly confused and meaningless.

Since regression is pre-eminently a psychoanalytic concept and since no one has superseded Freud as a theorist in this field, it is appropriate to turn to him for an authoritative statement of this principle. This writer, it so happens, is not a formal systematist, and it is accordingly

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necessary to extract his purely theoretical views, piecemeal as it were, from the context of his extensive clinical and popular writings. This is not to say, however, that his theoretical formulations are inexplicit, contradictory, or any less comprehensive and complete than the limitations of logic and empirical observation necessitate in a new and difficult field of inquiry.

In a technical paper that appeared in 1916, Freud introduced the topic of regression as follows:

> When we investigate psychoneurotic conditions, we find in each of them occasion to comment upon a so-called *temporal regression,* i.e., the particular extent to which each of them retraces the stages of its evolution. We distinguish two such regressions—one in the development of the ego and the other in that of the libido. In sleep, the latter is carried to the point of restoring the primitive narcissism, while the former goes back to the state of hallucinatory wish-fulfilment.

At a later point in the same article, Freud also distinguished between "the previously mentioned temporal or developmental regression" and what he then termed "topographical regression." In subsequent writings, however, he has made comparatively little use of this latter term, employing instead the term "repression." Writing in 1920, Freud said:

> [In the present discussion] we have not been using the word *"regression"* in its general sense but in a quite specific one. If you give it its general sense, that of a reversion from a higher to a lower stage of development in general, then repression also ranges itself under regression; for repression can also be described as reversion to an earlier and lower stage in the development of a mental act. Only, in repression this retrogressive direction is not a point of any moment to us; for we also call it repression in a dynamic sense when a mental process is arrested before it leaves the lower stages of the unconscious. Repression is thus a topographic-dynamic conception, while regression is a purely descriptive one."

As is well known, Freud worked out most of his psychological principles on the basis of observations concerning the sex life of neurotic human beings, but, as in the case of regression, many of his findings have a much wider application. Consequently, it is understandable why it should be in this setting that one finds Freud's most trenchant formulations regarding regression, which, however, because of the dynamic character of all psychoanalytic concepts, are necessarily intertwined with other principles which must also be given at least incidental consideration.

In a paper that appeared in 1912, Freud presented a detailed statement of his conception of regression in the etiology of neurotic illness and posited that its occurrence or non-occurrence is primarily contingent upon two factors: (a) *fixation* and (b) *frustration.* According to the view developed at that time and subsequently held with relatively little modification, the erotic life (libido) of civilized human beings passes through several more or less discrete stages in its development from the so-called narcissism of infancy to the genital heterosexuality of normal adult life. Because of the continuing pressure of the socializing and educational forces in modern society (plus the changing needs of the child, produced by physical maturation), each of the intermediate stages is successively achieved and then abandoned for the next higher level of adjustment, until the final adult goal is reached. If, however, for any of several possible reasons, this development process does not go forward in the usual way and the individual never advances beyond one of the intermediate stages, there results what may be called *absolute* fixation. This is a phenomenon that actually occurs in the lives of some persons and is assumed to provide the basis for the sexual perversions. But since there is here no question of a *return* from a later to an earlier mode of adjustment, the problem of regression is not, of course, involved.

On the other hand, in the lives of persons who do make the prescribed step-by-step transitions in their sexual development (however falteringly), the habits that are acquired and reinforced at each successive stage necessarily have a certain strength or intensity (cathexis) that is more or less enduring; and it is the varying strength of such habits that determines the extent to which *relative* fixation may be said to have occurred at any given point. This phenomenon, in contra-distinction to absolute fixation,[1] is of special significance for the understanding of the mechanism of regression; for it is presumably the specific nature and extent of the relative fixations in an individual's life-history which determine the pattern of regression ("choice of neurosis") that will occur if, subsequently, a superimposed mode of adjustment or habit system meets with an insuperable obstacle (i.e., if *frustration* occurs) and if there is relatively little opportunity for further *progression* (i.e, for the development of still other new habits). In other words, the greater the strength of a relative fixation, other things equal, the greater the tendency for regression to occur to the level of that fixation when subsequently acquired habits (in the same impulse-need-system) are thwarted, punished, or otherwise prevented from functioning effectively and bringing the customary satisfaction.

Of the various passages in which Freud has described the principle of regression, perhaps none is more vivid or instructive than the following, which, for additional reasons that will later become evident, is worth quoting in full.

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[1] Freud holds that, although sharply distinguishable at the conceptual level, there is in actual practice a continuum between absolute and relative fixations. He says: "There exist, therefore, two extremes—'inhibited development' and 'regression'—and between them every degree of combination of the two factors." (It should be noted, incidentally, that *absolute* and *relative fixation* are not Freudian terms, but their introduction seems warranted as an aid to clear theoretical exposition.)

> The second danger [besides that of absolute fixation] in a development by stages such as [that of the libido] we call *regression;* it also happens that those portions which have proceeded further may easily revert in a backward direction to these earlier stages. The impulse will find occasion to *regress* in this way when the exercise of its function in a later and more developed form meets with powerful external obstacles, which thus prevent it from attaining the goal of satisfaction. It is a short step to assume that fixation and regression are not independent of each other; the stronger the fixations in the path of development the more easily will the function yield before the external obstacles, by regressing on to those fixations; that is, the less capable of resistance against the external difficulties in its path will the developed function be. If you think of a migrating people who have left large numbers at the stopping-places on their way, you will see that the foremost will naturally fall back upon these positions when they are defeated or when they meet with an enemy too strong for them. And again, the more of their number they leave behind in their progress, the sooner will they be in danger of defeat.

The writer goes on to say that a clear conception of the relation between fixation and regression is fundamental to the understanding of the psychoanalytic theory of the neurosis, for, as already indicated, regression or a tendency to regression is assumed to lie at the basis of all symptom-formation. When, under the stress of a need that has been denied its customary form of gratification, regression occurs or is in danger of occurring, anticipation of the penalties that were originally effective in bringing about the required habit progression to this particular level of gratification is, according to psychoanalytic theory, sure to be reactivated; [2] and it is precisely this reactivation of old anticipations of punishment which provides the anxiety that is so constant and so conspicuous a feature of every neurosis. It is for this reason that regression is so likely to be pathogenic. In this connection, Freud says:

> I think that you will be soonest reconciled to this exposition of fixation and regression of the libido if you will regard it as preparatory to a study of *aetiology* of the neuroses. . . . People fall ill of a neurosis when the possibility of satisfaction for the libido is removed from them—they fall ill in consequence of a "frustration," as I called it. . . . This of course does not mean that every frustration in regard to libidinal satisfaction makes everyone who meets with it neurotic, but merely that in all cases of neurosis investigated the factor of frustration was demonstrated.
>
> The libido is [thus] blocked, as it were, and must seek an escape by which it can find an outlet for its cathexis (charge of energy) in conformity with the demands of the pleasure-principle: it must elude, eschew the ego. The fixations upon the path of development now regressively transversed . . . offer just such an escape. In streaming backward and re-"cathecting" these

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[2] The connection between punishment (or threat of punishment) and education (habit progression) has been discussed at length in a previous publication. It is here taken for granted and will be given only incidental consideration in the subsequent pages of this paper.

> repressed [abandoned] positions, the libido withdraws itself from the ego and its laws; but it also abandons all the training acquired under the influence of the ego. It was docile as long as satisfaction was in sight; under the double pressure of external and internal frustration it becomes intractable and harks back to former happier days.
>
> You see that this escape of the libido under the conditions of conflict [frustration] is rendered possible by the existence of fixations. The regressive cathexis (with libido) of those fixations leads to a circumventing of the repressions [inhibiting anxieties] and to a discharge—or a satisfaction—of the libido, in which the conditions of a compromise have nevertheless to be maintained. By this detour through the unconscious and the old fixations the libido finally succeeds in attaining to a real satisfaction, though the satisfaction is certainly of an exceedingly restricted kind and hardly recognizable as such.

In thus retrogressively resorting to earlier modes of gratification, the individual, however, commonly re-encounters *old* anxieties; and it is the coexistence of *both* pain- and pleasure-giving functions in the symptomatic acts of the psychoneuroses that gives them much of their apparent mystery, unintelligibility, and tenacity. The paradox is rendered all the more dramatic by the fact that the individual in whom old sources of pleasure are being reactivated is likely to know nothing, consciously, of this aspect of the process and to experience only the painful component. As Freud says, "the person concerned is unaware of the satisfaction and perceives this that we call satisfaction much more as suffering, and complains of it."

Taken, then, in its most general, abstract form, regression—or, to use a somewhat more descriptive term, habit regression—is a relatively simple concept. As the preceding discussion shows, it is merely the converse of habit *progression,* which may be defined as the development of a new mode of need-gratification as a consequence of disruption of or interference with a previously established mode of adjustment. If, after habit progression has occurred, the more recently acquired mode of adjustment is in turn disrupted, one of two results may be expected: (a) still further habit progression or (b) return to an earlier mode of adjustment, i.e., habit *regression.*

In contrast to its conceptual simplicity, regression as it actually occurs in the case of any given human being is likely to be a relatively complicated affair. First of all, the behavior that appears when a given level of adjustment is regressed to is almost never exactly the same as the behavior that occurred previously, before this level of adjustment was abandoned. Changes in physical size and appearance, altered status in the community or family, acquisition or loss of habits not directly affected by the regression, re-arousal of anxieties that were used to produce habit progression, and a number of other factors may so confuse any given instance of regression as to render it almost unrecognizable as such. Yet another complication arises from the fact that in many cases neurotic symptoms appear, not because regression has actually occurred, but because it is merely in danger of occurring. Finally, regression at the human level is not something that ordinarily transpires before the eyes of the clinical observer but has to be reconstructed on the basis of the testimony of the affected individual or of other persons.

From the point of view of exemplifying the concept of regression and of giving it objective specificity, it is, therefore, a real advantage to be able to produce instances of this phenomenon under the controlled and reproducible conditions of the laboratory. Beginnings have been made in the study of experimentally induced regression in children, but such work, whether with children or adults, has severe limitations. Animals can, of course, be much more freely manipulated and modified from the point of view of their basic behavior in an experimental setting than can human beings, and their use in this connection is clearly indicated. At the present stage, however, the usefulness of animals in such research is probably mainly pedagogical, in the sense that it provides a more general opportunity for first-hand contact with clinically discovered phenomena than does the clinic itself and supplies paradigms that may be especially useful as aids to the clearer conceptualization of the psychological principles involved. Special care should apparently be exercised at present not to interpret such experimentation as constituting "tests" of the validity of the concept of regression, or of any other psychological principle derived from clinical investigation at the human level. If comparable findings are obtained in animals lower than man, a certain presumption is established in favor of the validity of the observations at the human level; but, on the other hand, failure to obtain comparable findings does not demonstrate the invalidity of the human observations. It is, therefore, as an "analogue" of human regression that the animal behavior reported in the next section is presented and not as a rigorous, experimental attempt to determine whether the theory of regression, as developed psychoanalytically, is "true or false."

II

During the course of an investigation undertaken for a different purpose, it was discovered that by slightly altering conditions, something analogous to human regression could be produced in the white rat. The apparatus being employed at that time and later taken over without modification for the present study, consisted of a box-like compartment, 5″ × 10″ × 36″, the front side of which was made of glass, with the floor consisting of a grill of transverse stainless-steel rods (0.084″ in diameter), spaced ⅜″ apart. The top was hinged so as to act as a door through which rats could be put into and taken out of the apparatus. At the right-hand end of the compartment thus formed was a brass pedal, 2″ × 4″, hinged at the bottom and normally held in a vertical position by a spring attached to an arm that extended horizontally in the rear. This arm made an electrical contact that was broken whenever the pedal, which moved very easily, was pressed. By means of a 5,000-ohm, wire-wound potentiometer, the sliding arm of which could be slowly rotated by a constant-speed motor and an electromagnetic clutch arrangement, an alternating current (60 cycles, 115 volts at source) could be impressed on the steel rods forming the grill. This current built up linearly from zero intensity until, at the end of 2.25 minutes, it reached a maximum intensity, after which it remained constant until the pedal was pressed, at which time the potentiometer would re-set (due to release of the clutch) and the current on the grill would drop to zero. As soon as the pedal was allowed to return to normal position, the current would again automatically build up.[3]

When a rat (never before subjected to shock) was placed in this apparatus for the first time and the alternating current was allowed to build up, there was usually an initial period of about 60″ during which the shock appeared to be subliminal. There then appeared minor signs of agitation, such as sniffing at the grill, lifting of individual feet, "sitting up," moving the head to and fro, and so forth. As the current became stronger, the agitation became progressively more violent, culminating in jumping, squealing, biting at the grill, clawing at the walls, and random running about. Under these circumstances the average rat would, through chance, hit the pedal and thereby turn off the shock within three to six minutes after its onset. This first, wholly fortuitous escape from shock created a noticeable tendency for the animal to stay at the pedal end of the apparatus; and when the shock next became liminal,[4] the resulting agitation consequently occurred primarily in this vicinity. On the second trial, the animal usually hit the pedal within two to four minutes and very commonly "froze" as soon as it did so, in precisely the position that it happened to be in at the instant when the shock went off (reminding one of the game of "Statue" played by children). On the third presentation of the shock, the amount of random movement that occurred before the pedal was pressed and the shock terminated was relatively limited.

[3] The mechanical details of this apparatus will be described more fully in a later publication. In order to protect the rat from receiving a tetanizing shock in the event of a marked drop in bodily resistance (as, for example, due to its feet becoming moist with urine), a 10,000-ohm fixed resistance was placed in series with the grill and the leads from the potentiometer. The strength of the current impressed on the grill when the motor-driven potentiometer was at maximum setting was adjustable by means of a second (manually operated) potentiometer of the same specifications, in tandem with the first, which, however, was set so as to give the type of behavior described in the following paragraph and was not changed during the course of the present study.

[4] On the second and for a few subsequent presentations of the shock, the limen seemed to be considerably lowered, agitated behavior being observable as soon as 30 to 40 seconds after the current started to build up. This "sensitization" effect has been studied quantitatively and will be discussed separately.

Learning, in other words, was fairly precipitous. By the time an animal had had ten presentations of shock, random agitation had virtually disappeared and the pedal-pressing reaction had become prompt and specific. Between trials, after the pedal habit was well established, the rat would usually sit (often on its haunches facing the pedal) in a position that was expedient for making the next pedal reaction.

In the early stages of learning, escape from shock by pressing the pedal would often be immediately followed by several additional, highly energetic repetitions of this act, not infrequently accompanied by biting of the metal frame surrounding the pedal. This behavior naturally delayed the shock from building up again. Reactions that seemed to be definitely anticipatory also occurred occasionally, some seconds after the last pedal reaction was made but before the shock had again actually become liminal (as judged by other behavior). These reactions likewise caused the shock-presenting apparatus to re-set at zero, but they were not counted as learning trials. In order for a reaction to count as a trial, a minimum of 30 seconds had to elapse between reactions.

In the present study, five Wistar albino male rats, six months old and experimentally naive, were subjected to ten learning trials daily for three successive days under the conditions just described. These animals will be referred to collectively as the Control Group and designated individually as C1, C2, C3, C4, and C5. Complete records of learning performance were kept for each of these rats, but they are of no special relevance here and need not be reproduced.

Five comparable animals, constituting the Experimental Group (E1, E2, E3, E4, and E5), instead of being treated as were the members of the Control Group, were first submitted to the following procedure. On each of six successive days they were put individually into the apparatus, with the shock-terminating pedal covered with a metal curtain. The shock was then allowed to build up to maximum intensity and remain there for 15 minutes. At the end of this time the shock was turned off by the experimenter and the rat removed from the apparatus. Under these conditions all the animals discovered that if they sat quietly on their hind legs, holding their fore-paws well above the grill, they received comparatively little shock.[5] The result was that after two or three 15-minute sessions in the apparatus, the rats would take this position as soon as the shock became sensible and would maintain it, with only occasional interludes of random activity, until the shock was turned off. This reaction of

[5] The relatively low voltage of the current made this effect possible. If a much higher voltage had been used, such that the total amount of current flowing through the rat would have remained approximately constant regardless of changes in the rat's resistance, then the smaller the area of contact with the grill the greater the concentration, or density, of current in the affected areas and the greater the subjective intensity of the shock. Under the latter conditions, sitting on the hind legs would have been more, instead of less, painful than crouching on all fours.

sitting quietly on the hind legs in order to lessen (though not entirely escape) the shock will be designated as Habit A, in contrast to the pedal-pressing reaction, which will be designated as Habit B.

On the day following the six days of training in Habit A, the animals in the Experimental Group were put into the apparatus, with the metal curtain removed, and the pedal therefore made available to them for the first time. Within ten minutes or less time some of the animals showed enough random activity to result in their pressing the pedal. But some of the animals persisted in Habit A so consistently that they did not press the bar in this length of time and had to have their toes pinched slightly by means of a slender rod that was inserted below the grill, in order to break up the Habit-A type of adjustment and bring about a renewal of random activity. In this way all the animals in the Experimental Group were eventually made to press the pedal, after which Habit B (the pedal habit) was learned fairly rapidly, though not so rapidly as it had been learned by the Control Group. This difference was obviously due to the lingering tendency on the part of the former group to meet the shock situation by means of Habit A, a tendency which was not present in the latter group; but since Habit B was a definitely superior mode of adjustment (permitting the rat to escape the shock completely instead of only partially), it eventually superseded Habit A in all cases. By the end of three days of training in Habit B (30 trials in all), the animals in the Experimental Group were quite as proficient in executing it as were the animals in the Control Group. That is to say, after equal amounts of training in Habit B, the animals in the two groups behaved in an indistinguishable manner in this situation. This fact, nevertheless, does not mean that they no longer differed. As will be shortly noted, the fact that their historical antecedents were different caused them to act quite differently under changed conditions.

To summarize the procedure up to this point, the five animals in the Control Group and the five animals in the Experimental Group were given equal amounts of training in Habit B, with only this difference, that the latter were first required to learn Habit A and were then made to abandon it and *progress* to Habit B, whereas the animals in the former group learned *only* Habit B.

On the day following the completion of training in Habit B, the animals in both groups were put into the apparatus with the pedal accessible as usual, except for the fact that whenever they touched it they received a slight shock from its surface.[6] This, a new element in the situation, created a type of conflict. In order to terminate the mounting grill shock, the rat, in other words, had to submit to at least a momentary additional shock from the pedal. Instead of Habit B now functioning without hindrance, as it previously had, a definite obstacle was placed in the way of its free performance. Under these conditions, the animals in the Control Group continued to execute Habit B for ten trials (cf. Section V). On the other hand, four of the five animals in the Experimental Group promptly "regressed" to Habit A (see Fig. 1A). The difference in behavior in this connection is clearly shown in Table 1, which, taken with the accompanying legend, is self-explanatory.

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[6] The current used to produce this shock was derived from a Muenzinger-Walz constant-current apparatus and was adjusted to 0.03 milliamperes.

TABLE 1

The entries represent the time (in seconds) that the individual members of two groups of rats delayed, after the onset (at zero intensity) of a gradually increasing electric charge on the grill on which they stood, before pressing a pedal to cause this charge to drop to zero, the pedal being also for the first time in their experience electrically charged. It will be noted that the pedal-pressing reaction to the grill shock, referred to as Habit B, persisted in all the rats in the Control Group for all ten trials, despite the "frustrating" shock on the pedal. On the other hand, in four out of five of the animals in the Experimental Group, Habit B was abandoned after one to three contacts with the pedal (a delay of 300 seconds being the criterion of abandonment). Upon abandoning Habit B, the rats in the Experimental Group "regressed" to Habit A.

TRIALS	CONTROL GROUP					EXPERIMENTAL GROUP				
	C1	C2	C3	C4	C5	E1	E2	E3	E4	E5
1	59	87	98	92	95	73	186	149	88	73
2	64	94	116	95	75	45	128	277	300	108
3	75	91	128	90	101	157	300	102		78
4	125	74	124	108	120	300		300		78
5	120	110	121	111	69					63
6	92	134	160	137	86					108
7	123	141	86	118	153					75
8	124	118	121	107	75					84
9	113	90	82	98	182					69
10	120	65	105	118	83					108

III

Before discussing the supplementary observations on "reaction-formation" made in connection with the experiment just described, it is desirable to consider the behavior here reported in somewhat greater detail. It is believed that the basic psychological mechanisms underlying this behavior are comparable in all essential respects to those involved in the phenomenon of regression as it is defined psychoanalytically and that by making this parallelism explicit certain problems can be seen somewhat more clearly than when viewed only against the complex background of clinical observations.

Upon first encountering a given form of noxious stimulation (grill shock),[7] the rats in the Experimental Group in the present study made a characteristic adjustment to it (Habit A). This adjustment represented a *first fixation*. It was not, however, an entirely adequate solution to the problem, and when a new, more completely satisfactory type of adjustment was made available, the animals (in some instances with a little prodding) fairly quickly *progressed* to it (Habit B). This new adjustment constituted a *second fixation*. Now, however, when an "external obstacle" (shock on pedal) was placed in the way of this latter type of behavior, i.e., when a *frustration* was introduced, the impulse to terminate the grill shock by means of Habit B was thrown into *conflict* with the impulse to avoid the pedal shock. Since the margin of advantage that Habit B had previously had over Habit A was now eliminated (in four of the five animals), Habit A became the preferable (less "painful") mode of adjustment and was reverted to. In manifesting this regressive change, moreover, the behavior of the rats here employed further paralleled the behavior commonly observed in human beings under similar circumstances in that a very elementary type of "symptom" (reaction-formation) also emerged. This feature of their behavior will be returned to subsequently.

The first major point to be emphasized in the present connection is that the regressive behavior here reported was *historically* determined. Since the animals in the Control Group did not abandon Habit B when its previously unhampered execution was interfered with, it follows that the animals in the Experimental Group did so, under externally identical circumstances, solely for the reason that their *past experiences* had been different.[8] In other words, because they had first learned, and later abandoned, a given type of adjustment (Habit A), they were *predisposed* to return to it, in a way that the animals in the Control Group were not, when the subsequently acquired adjustment (Habit B) was interfered with.[9] As the passages cited in Section I indicate, this view of the historical determination of regression is completely consonant with psychoanalytic theory. Freud has unremittingly stressed the role of prior fixations in the causation of regression, and the term itself carries a similar implication. A person cannot "go back" to something with which he has had no previous experience.

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[7] This may be thought of as analogous in function to libido (erotic drive) in Freud's discussion of regression in human beings (Section I).

[8] It can scarcely be supposed that this dissimilarity of behavior was due to "constitutional" differences. Genetically these animals, coming from a highly inbred strain, were practically identical, and the two groups were, moreover, formed by purely random selection.

[9] This finding may seem to have an obvious moral for education. If "stable personalities" are desired, then let children be taught only one mode of adjustment to any given need. In other words, "bad habits," if allowed to form, not only have to be overcome before "good habits" can be established, but they more or less permanently weaken the "good

In a challenging paper, Lewin has, however, taken the position that regression is not historically determined. He says:

> The theory of regression indicated [here] is entirely unhistorical. According to it, the regressive behavior would occur under the described circumstances even if the person in question were created as an adult Golem. In other words: even a person without childhood who never experienced child-like behavior should regress to child-like behavior very different from what has actually happened in the history of the individual.

According to this writer, the personality of a normal adult is "more differentiated" than that of a child. This so-called differentiation ("number of sub-parts within the person") tends to break down under "high pressure," i.e., the personality becomes less complexly structured. "In other words: a person under pressure should 'regress' to a more 'primitive' level at least as far as his degree of differentiation is concerned" (p. 208). Lewin adds that this "primitivation" occurs not because of the continuing latent existence of specific habits or patterns of adjustment (fixations) that have been overt at an earlier point in the individual's life-history, but because the personality is more or less destructured, as a result of a traumatic factor (abnormal "tension," "high pressure," or some other strain within the personality). If, for example, a bunch of toy blocks is arranged so as to form a house and if the house is then pushed over, the resulting un-structured mass of blocks is more "primitive"; this change in complexity of organization represents "regression," even though the blocks had never before been in such a disorganized state. According to Lewin, it is sheer coincidence that the personality of the child and of the adult who has "regressed" is, in both cases, relatively undifferentiated.

In his study of reasoning in schizophrenic human adults, Cameron concludes that the intellectual changes occurring in this type of mental disorder involve simple "disorganization" and "confusion" rather than regression, as many writers currently believe. This conclusion agrees with Lewin's re-definition of regression in a-historical terms, but Lewin's views

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habits." Therefore, establish the "good habits" in the first place. Although this is good advice in so far as it is practical, the fact is that human needs and human abilities do not develop hand in hand. The infant has most of the basic needs that the adult has, but he has vastly different potentialities for fulfilling these needs in "good" (i.e., socially approved) ways. He must, therefore, necessarily be allowed to develop and engage, often for months or even years, in habits that are "bad" in the sense that they must ultimately be given up for "better" ones. This is a dilemma that must be kept constantly in mind in the training of children.

in this connection are not supported by the main body of clinical observation, nor by the findings of the present, admittedly analogical investigation. Personality de-structuralization, of the kind posited by Lewin, may indeed occur, but it seems distinctly dubious to propose that the behavioral changes of the kind that are commonly referred to as "regressive" and believed to be historically determined also fall into this category.

In addition to the question as to whether regression is or is not historically conditioned, yet another issue arises here. In the two studies cited at the outset of this paper, Hamilton and Krechevsky and Sanders have taken the position that regression represents "a reversion to an earlier, well-established mode of behavior, and persistence in that mode despite the relative inefficiency of that behavior in solving the problem confronting the organism. Further, regression has been assumed to arise when the individual is placed in a strong emotional situation." These writers thus indicate, first of all, their acceptance of the orthodox psychoanalytic view that regression is a function of past experience. Their second point, that the mode of behavior regressed to in any given case is relatively "inefficient," involves assumptions that will be returned to in the next section. For present purposes, major interest attaches to their contention that the *precipitating* cause of regression (as contrasted to the predisposing cause, i.e., fixation) is a "strong emotional situation." This latter proposition conforms to the popular notion that "mental breakdowns" are caused by severe emotional experiences or "shocks," but it is not in keeping with the analytic view in such matters, according to which the precipitating cause of regression is *frustration,* which in turn is defined as a relatively specific interference with an established mode of need-fulfilment. In other words, "emotional situations" are pathogenic, i.e., lead to regression, only when they constitute such an interference. Failure to make this essential distinction impairs the relevancy of the otherwise admirably designed experiments of the writers cited.[10]

In the experiment reported by Hamilton and Krechevsky, rats first learned that they could obtain food either by turning to the right or to the left at the choice point on a simple T-maze, but that they could do so more quickly (due to a shorter path) by turning to the right. When this *right*-turning habit was well established (occurring in 90 per cent of the trials), conditions were altered so that a *left* turn now resulted in their getting to the food more quickly. The right-turning habit consequently began to disappear and to be superseded by a new left-turning habit. At this stage the animals were divided into a control group and an experimental group, and in the case of the latter animals "a strong electrical shock was administered at a point just before the bifurcation." "Upon introduction of shock the experimental group, *as a group,* showed a decided tendency to revert to its former right-turning behavior." The control group, on the other hand, continued, as might have been expected, to show left-turning behavior with gradually increasing regularity. The shock just before the choice point was regarded in this experiment as providing a "strong emotional situation"; and since it resulted in a reduced tendency to perform a subsequently acquired habit, this change was taken as evidence of the statement that regression occurs "when the individual is placed in a strong emotional situation."

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[10] In reporting a series of studies aimed primarily at other problems, Miller and collaborators have assigned frustration its proper role in relation to regression as psychoanalytically conceived. They have secured evidence demonstrating: (a) that interference with a thoroughly established maze habit through non-reward results not only in a retrogressive change from few to many errors (blind-alley turns) but also in a reversion to the particular *patterning* of errors observed early in the initial learning period; (b) that interference, through non-reward, with the habit of running down a straight alley for food reinstates an earlier gradient of speed of running and (c) that this type of frustration also produces a return of earlier random activity (sniffing about, grooming, etc.) accompanied, however, by a form of "energization" (aggression?) that makes this activity more vigorous than it originally was. Although the role of frustration in the production of regression is demonstrated admirably in these studies, it is didactically unfortunate that the particular situations employed were of such a nature that the role of fixation was not also clearly illustrated.

The inadequacy of this analysis is indicated by the experiment reported by Sanders. In her study rats were trained to run down an initial common path, take a U-shaped detour to either the right or to the left, and then come back into a final common path, at the end of which they obtained food. Definite preferences were shown by individual rats for one or the other of the alternative routes, which preferences were assumed to be "unlearned," "ontogenetically lower," possibly "inherited." This "natural tendency" to select a given route was then strengthened by introducing a differential temporal delay in the final common path, consisting of only five seconds if the preferred path were taken but of ninety seconds if the non-preferred path were taken. Training was continued until 36 of 40 trials were "in the direction of the natural tendency." At this point the procedure was reversed, the long delay in the final common path occurring if the previously preferred path were taken and the short delay occurring if the previously non-preferred path were taken. The latter procedure was continued until all animals had altered their behavior to the extent of now selecting the formerly non-preferred path in 36 of 40 trials. At this juncture an electric shock was introduced just before each animal reached the choice point, near the end of the initial common path. As a consequence, all five of the rats used in this study reverted to the originally preferred route, although this route was now not "adaptive by any objective standard" since it continued to involve the longer delay in the final common path. On the basis of this finding, Sanders concluded that "regression has an emotional basis," although a second experiment with the same animals showed that if they were shocked in an unrelated compartment, but immediately before they were put into the maze, no regression occurred. The latter finding leads Sanders to add the qualification that although "regression has an emotional basis, . . . this emotionality must be very closely integrated with the situation."

Martin, using the same type of apparatus previously employed by Hamilton and Krechevsky, has likewise recently reported failure to obtain regression by shocking rats outside the experimental situation proper, thus giving further grounds for the inference, suggested by Sanders' findings, that electrical shock (emotional disturbance) *per se* does not produce this phenomenon.

It is impossible to say precisely why it is that in both the Hamilton and Krechevsky experiment and the Sanders experiment, regression occurs only if shock is administered just before the choice point, not if administered in a spatially unrelated situation; but the present writer entertains a strong suspicion that this fact is in some way dependent upon the character of the *anticipatory reactions* in progress as the animal approaches this point. Anyone who has watched rats run a familiar maze has observed their tendency to hug the wall on the side of their next anticipated turn. Such a tendency is probably one of the best objective measures in animals of what is known in human beings as "intent." It is well established that if a person (especially a child) is punished merely for *intending* to do something, the punishment is quite as effective in inhibiting the intended act as is punishment administered during or after the act. On the other hand, if a person is simply subjected to a painful type of stimulation before a given intention is formed (and if no connection is established through the speech process), such a penalty will have no specific deterring effect. Similarly in the case of rats in a maze: if they are shocked before a given "intention" has formed, i.e., before certain anticipatory reactions are in progress, there will be no inhibition of the act for which the anticipatory reactions are appropriate.[11] Although it is realized that this hypothesis, when applied to the experiments in question, raises certain unsettled issues, it points the way for further investigation and serves as a tentative means of bringing the results of these experiments into line with the conception of regression which holds that its precipitating cause is a *specific frustration* (habit interference) rather than a generalized emotional disturbance.

IV

In the experiments just cited, the authors take as one criterion of regression the "relative inefficiency" of the habit that is reverted to. If, as in these experiments, the habit reverted to involves the use of a spatially or temporally longer path to food than does the abandoned habit, it may appear that there is indeed an objective basis for comparing the "efficiency" of the two habits. As various writers have pointed out, however, the concept of "efficiency" always has an ultimately subjective reference. In what sense can a shorter pathway connecting two points in space be said to be "more efficient" than a longer pathway, except in the sense that the margin of gains over losses is greater *for the rat* in one case than in the other? Under the simplest conditions, the loss would be locomotor effort (increased fatigue stimulation) and the gain would be food (reduced hunger stimulation). With amount of food obtained per run (on either path) constant and with the effort exerted unequal, then the short path is, in this *subjective* sense, more "efficient." Theoretically, if none of the factors in this situation was altered, the habitual use of the short path would never be abandoned.

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[11] Evidence presented by Miller in another connection lends strong support for this assumption.

The fact is, however, that at a particular point in both of the investigations under discussion the short path *was* abandoned. How did this change come about? According to the present analysis, it could have occurred only because the margin of gains over losses was altered in such a way as to make it "more efficient," in the subjective sense, for the rat to take the long path. In these investigations the food received at the end of a run remained constant, and the relative lengths of the two pathways remained constant. What changed? As already indicated, it is the present writer's conviction that in order to obtain the effect reported by the authors cited, the short pathway must have taken on anxiety-arousing potentialities (due to the electric shock) which it did not formerly possess and which were not acquired (at least, not in the same degree) by the long path. If such can be assumed to be the case, the advantage in using the short path would thereby have been destroyed, and it would have then become "more efficient" to take the longer path; i.e., the margin of gains over losses would have been reversed, with a corresponding shift in behavior, which was "regressive" but not "inefficient." Only by arbitrarily restricting interest to the food-getting function can the regressed-to behavior be characterized as "inefficient." Such an atomistic approach is obviously unrealistic and can be pursued to no advantage.[12]

When the results of the experiment described in Section II of the present study were first publicly reported, Dr. Saul Rosenzweig raised the question as to whether the abandonment of Habit B (pedal pressing) and the return to Habit A (sitting on the hind legs) was really a regression, or simply an "intelligent, adaptive reaction to a change in external circumstances." He emphasized the view that real regression always involves giving up one mode of adjustment that is relatively "good" for one that is "not so good." He summarized his point by saying that had he been a rat in the experimental situation described, he would have done just what the rat did but that he would not have felt that he had "regressed." Dr. Rosenzweig did not, in other words, consider the habit that was reverted to any less "efficient" than the habit that was abandoned, and suggested that the change was not, therefore, genuinely regressive.

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[12] The writer is assuming no one will hold that the regression observed in these experiments had a "structural" basis, i.e., was produced by differential damage to the neural mechanisms mediating the two habits.

The writer fully agrees, as may be surmised from the preceding discussion, that it was *not* less "efficient" for the rats (Experimental Group) that had learned Habit A, as well as Habit B, to revert to Habit A when an electric charge was put on the pedal (thereby interfering with Habit B); but it is not so easy to concede that this change in behavior cannot, for this reason, be legitimately regarded as a regression. As already pointed out, this type of change seems to possess all the essential attributes needed to qualify as regression in the traditional psychoanalytic sense; and it may help in clarifying the issue to recall that one of the distinctive contributions of psychoanalysis has been to break down the dichotomy between "normal" and "abnormal," "adaptive" and "maladaptive." According to psychoanalysis, all behavior—including even the most rampant and maddest of psychoneurotic symptoms—is adaptive in the basic sense that the individual who is doing the behaving is trying to diminish his discomfort and tensions, thereby obeying the all-inclusive "pleasure-principle." Living organisms do what they have to do and can; from the point of view of their own psychic economy every act represents the most "efficient," most "adaptive" behavior that is psychically possible under the circumstances.[13]

It is not difficult to see why there should be a strong inclination to assign a negative value judgment to regressive behavior. Human regressions are commonly in a direction *opposite* to that of the educational, socializing forces of the group; regression, under these conditions, is anti-social (counter-cultural) and as such is regarded *by other persons* as "bad," i.e., from their point of view "undesirable." This fact may prompt the group to take such retaliatory action toward the regressing individual (social disapproval, segregation, etc.) as will prevent the regressed-to mode of adjustment from being as satisfactory as it otherwise might be; but it is still the "lesser of two evils," from the individual's standpoint. If such were not the case, the regressive adjustment would be abandoned.[14]

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[13] This somewhat dogmatic statement raises a recondite psychological problem. How does one account for such apparent violations of the pleasure-principle as "deliberate" postponement, or even permanent renunciation, of gratifications that are immediately available (in the objective sense) and the self-infliction of injury or the solicitation of such treatment from others? This issue has, however, been dealt with in two other papers and will not be discussed at this time.

[14] "Better" adjustments than the one regressed to may, of course, be theoretically possible in a given situation, but the actual behavior of any particular human being

If, therefore, in the experiment described in Section II, the mode of adjustment (Habit A) that was regressed to when Habit B (pedal pressing) was interfered with was necessarily "better" from the rat's point of view, and if it is scarcely meaningful to speak of a rat's behavior as being either "good" or "bad" in the social sense (particularly in a situation that did not simultaneously involve other rats), then there would appear to be no grounds for holding that this adjustment was in any psychologically significant sense inferior, considering the changed character of external circumstances. It was, to be sure, a less-preferred adjustment *before* the shock was put on the pedal, a fact clearly shown by the alacrity with which the rats "progressed" from Habit A to Habit B when the pedal was for the first time made available to them (without shock on it). The mere fact, however, that in one situation a given type of adjustment (Habit A) may be inferior to another (Habit B) does not mean that, with altered circumstances (shock on pedal), the former may not become superior. In the field of *habit dynamics,* functional values are relative, not absolute; and much confusion can apparently be avoided if this fact is kept continually in mind.

In the light of the foregoing discussion, the supplementary experiment, reported below, may seem superfluous—and in the writer's estimation it is, in so far as the validity of this discussion is concerned; but it was nevertheless carried out, mainly as a matter of curiosity, and also partly in the hope that it might further point up some of the issues previously raised. It will be recalled that Dr. Rosenzweig questioned the justification for calling the reversion from Habit B to Habit A in the above experiment a "regression," on the grounds that, with the alteration in external circumstances (introduction of shock on pedal), Habit A, which had previously been abandoned for Habit B, ceased to be an inferior type of adjustment and became the superior adjustment; and going from an inferior to a superior adjustment was not be to regarded as a "regression." The writer's reply has been, in effect, that behavioral changes are always *progressive*

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is always limited, not by an all-wise Providence, but by that individual's own perceptions, knowledge, and intelligence, i.e., by his existing habit systems and his capacity and opportunity for new learning. (To take an example at the animal level, it was theoretically entirely possible in the conflict situation described in Section II, with electric shock on both the grill and the pedal, for the rat to turn over and lie on its fur-covered back, thereby completely escaping all shock. But this behavior is not in the reaction repertoire of ordinary rats and did not, therefore, come within the range of adjustmental alternatives in this situation.) The essence of many types of psychotherapy consists of an attempt to enlarge the patient's repertoire, or range, of relief-bringing (satisfying) behavior, either by "advice" (instruction) or by placing him in situations in which new learning is demanded (occupational therapy, change of environment, etc.). The psychoanalytic approach, on the other hand, rests on the assumption that most behavior limitations (neurotic incapacities) are due, not so much to simple habit deficits, as to internal conflicts (inconsistent habits) involving anxieties that are not "realistic." The therapeutic goal of analysis, therefore, is to remove these anxieties and thereby free the individual for effective, satisfaction-bringing action.

in the dynamic sense[15] and that regression has meaning, therefore, only in the *genetic* sense; and since Habit A was genetically prior to Habit B, then the change noted *was* a regression.

The supplementary experiment here referred to was carried out as follows.[16] Five experimentally naive rats were put individually into the apparatus previously described, and the electric shock on the grill (floor) was allowed to build up. The pedal at the end of the apparatus was available from the outset as a means of escape from the grill shock, but it was also kept continuously charged with the same intensity of electric current previously used to produce regression in the experiment already reported. Under these conditions four of the five rats readily acquired the pedal-pressing response (Habit B), despite the presence of shock on the pedal, and executed it with relatively little evidence of conflict for ten trials per day on each of three successive days. At the end of this time the experiment was discontinued, with no indication that the picture would have changed had it been carried on indefinitely. The fifth animal hit upon and then abandoned the Habit-B type of response to the grill shock after two trials on the first day and manifested instead a Habit-A type of adjustment. On the second day this animal completed ten Habit-B responses, but on the third day, after four Habit-B responses, again resorted to Habit A. In short, the results thus obtained show that in four of the five rats tested, the Habit-B type of adjustment was consistently preferred to the Habit-A type of adjustment, under the conditions stated, while in one animal the choice was unstable.

These results indicate, in other words, that for rats with no previous training ("fixation") in the performance of either Habit A or Habit B, the latter is the favored adjustment. This finding might, therefore, be taken as an answer to Dr. Rosenzweig's query as to whether the reversion from Habit B to Habit A under the conditions previously described was indeed regressive, in the sense of involving a change from a "good" to a less "good" habit. Have we not, in the experiment just described, a four-to-one vote in favor of the "goodness" of Habit B, as judged by five "unbiased" rats? Was not, therefore, reversion from Habit B to Habit A in the other experiment an instance of "true" regression, in that the rats which manifested this behavior did something that four out of five other rats, by the testimony of their own behavior, branded as "crazy," i.e., opposed to the self-interest of "right-thinking" rats in general?

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[15] This statement must be qualified in two respects. In the first place, it applies only to behavioral changes that are relatively stable, that involve, as it were, at least a temporary dynamic equilibrium. It obviously does *not* apply to behavioral changes that involve mere random, unorganized, unrewarded striving. The second point is that although regression is most clearly, unambiguously definable in the genetic sense, it may also conceivably be defined, in the dynamic sense, as a disruption (due to failure of reward or conflict) of a patterned, well-organized type of adjustment to the given situation, with ensuing recourse to random, unorganized behavior. But since random behavior is always a prelude (save in *Gestalttheorie*) to the establishment of a stable habit, regression, defined in this dynamic sense, is also a genetic regression. Cf. Wells' discussion of the *genetic, dynamic* and *social* aspects of regression.

[16] The writer is indebted to Dr. Neal Miller for proposing the particular form of this experiment.

The dilemma is easily resolved by making explicit some of the implied steps in this line of reasoning. In the experiment last performed, what was done, in effect, was to try to set up a social standard by which to judge the "normality" of rat behavior in a given situation. Instead of using a *human* social norm, which would have been patently unwarranted, a *rat* norm was established instead; and then the behavior of other rats was compared and contrasted therewith. Since the behavior of these other rats was found to be *different,* it was judged, therefore, as "abnormal," in this case, "regressive." What was overlooked here—but is fortunately well known because of the experimentally controlled character of the situation—is that the life-histories of the two groups of rats were different in one important detail, namely, that one group had been previously fixated on Habit A whereas the other group had not. The characteristically different types of reaction on the part of the two groups of rats in externally identical situations were, therefore, neither more nor less "normal" for one group than for the other.[17] The difference merely shows, again, the force and cogency of the argument previously advanced, that regression is historically conditioned (by the presence or absence of prior fixations) and that it is primarily in the *genetic* sense that this concept has greatest usefulness and meaning.[18]

V

As early as 1908, Freud alluded to the principle of "reaction-formation," yet it is only within relatively recent years that he and other psychoanalytic writers have particularly stressed its significance. This state of affairs has been part of a more general shift of emphasis in analytic theory, the outcome of which has been to elevate anxiety to a position of preeminent importance as "the fundamental phenomenon and the central problem of the neurosis." According to this latter conception, all symptomatic acts are to be viewed as serving in one way or another as "mechanisms of defence" against this phenomenon. Representing a return to a theoretical position tentatively advanced in 1894 and then abandoned, this interpretation was revived by the elder Freud in 1926 and has recently been further elaborated by Anna Freud. The latter lists ten "mechanisms of defence," as follows: regression, repression, isolation, undoing, projection, introjection, turning against the self, reversal, sublimation, and reaction-formation. It is therefore in this setting, as one of a variety of related mechanisms, that reaction-formation will be discussed and exemplified.

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[17] In another study the point has been stressed that apparently the sole basis for calling many types of behavior "abnormal," in both human beings and the lower animals, is that they are simply not understood by the observer. The problem is rendered especially acute in human beings by virtue of the fact that their life histories are so exceedingly variable, and yet these variations are rarely well known to the observer (or even to the individual himself).

[18] It goes without saying, of course, that in the experiments here reported the picture would have been very different had a sufficiently intense shock been used on the pedal to have prevented *all* rats from pressing it in order to escape the grill shock. Naturally, the intensity of the shock used was standardized somewhat below this point. The relation of intensity of shock in this situation to the type of reaction produced further emphasizes the relativity of effects in the study of habit dynamics. In passing it may be mentioned that the nature of the results obtained in a situation of this kind can also probably be significantly influenced by the relative amount of training given in the performance of particular habits (strength of fixation) and, somewhat less certainly, by the age of the animals employed. The possible role of age was only hinted at in some preliminary experimentation and has not been definitely established.

Like all other psychoanalytic principles, reaction-formation is regarded as pathological only when it functions with unusual force or frequency. In its simplest, least dramatic forms, it involves nothing more, for example, than the tendency on the part of a student who is especially fond of playing bridge to avoid his bridge-playing friends at the time of an impending examination. The paradox is that he avoids them precisely for the reason that he likes them, but the paradox disappears when it is realized that he also fears the consequence of indulging his liking, at least at this particular time. The student's avoidance of his friends under these circumstances thus represents an attempt to minimize the prospect of failing the examination; it is, in short, a "defence" against anxiety. The tendency for an inebriate to make wide detours in order to avoid passing a familiar bar when trying to support a resolution to be temperate is another illustration of the same mechanism.

Of the various passages in which Freud refers to reaction-formation, the following, constituting an incidental comment on the infantile neurosis of a five-year-old boy, sets forth the essential features of this phenomenon perhaps most clearly.

> Thus we have a conflict springing from ambivalence—a firmly founded love and a not less justified hatred, both directed against the same person. His [little Hans'] phobia must be an attempt to resolve this conflict. Such conflicts due to ambivalence are very common; we are acquainted with another typical outcome of them in which one of the two contending trends, usually the tender one, becomes enormously augmented, while the other disappears. Only the excessiveness of the tenderness and its compulsive character betray the fact that this attitude is not the only one present, and that it is ever on its guard to keep the contrary attitude suppressed, making it possible to construe a train of events which we describe as repression through *reaction formation.*

The element of conflict in such a situation emerges, not only from the love-hate ambivalence *per se,* but also from the knowledge (often unverbalized) that overt expression of hostility would result in "loss of love" (punishment, deprivation, isolation, etc.). Anticipation of such a loss arouses anxiety, and in the attempt at "defence" against the latter the most elaborate efforts may be made to conceal and deny the component of hostility. How can the defence be managed better than by continual testimony, in word and act, of affection and solicitude? But the trained eye detects this subterfuge, this intensification of one type of behavior by the very strength of an opposing impulse.[19] Anna Freud describes as follows the form that reaction-formation may take in a little girl who is highly ambivalent toward her mother:

> A child who has been aggressive toward her mother develops an excessive tenderness towards her and is worried about her safety; envy and jealousy are transformed into unselfishness and thoughtfulness for others. By instituting obsessional ceremonials and various precautionary measures she protects the beloved person from any outbreak of her aggressive impulses, while by means of a code of exaggerated strictness she checks the manifestation of her sexual impulses [which would be disapproved by the mother no less than aggression].

Particularly common as the basis of compulsive behavior in both children and adults, reaction-formation is not, however, always easy to demonstrate convincingly from clinical material. Although (like regression) relatively simple as an abstract concept, it is likely in any actual case—save in such elementary examples as first given above—to seem complicated and obscure, especially in situations in which other interpretations are logically possible. It is all the more fortunate, therefore, that what seem to be good experimental analogues of this phenomenon as it appears in human beings can be produced by the use of animals in the laboratory.

It has already been remarked that instances of reaction-formation were observed in connection with the study of regression reported in Section II. It will also be recalled that after the animals in the Experimental Group had acquired Habit A and then abandoned it for Habit B, a shock was put on the pedal involved in executing Habit B; and that the shock, after a few (one to three) repetitions of the pedal response under these conditions, caused Habit B to be in turn abandoned, with a reversion to Habit A. This breakdown of Habit B and regression to Habit A, although relatively precipitous, did not, however, occur without evidence of conflict in these animals. Even more pronounced in the animals in the Control Group, this conflict took the following form. After Habit B was well established in these animals, they customarily sat very near the pedal after pressing it, in readiness for the next presentation of shock from the grill. When, however, shock was put on the pedal, their behavior was noticeably altered. After discovering that the pedal was charged, these animals would frequently *retreat* from the pedal end of the apparatus soon after they began to feel the grill shock, i.e., as soon as they began to have an impulse to press the pedal. In effect, they were thus *running away from the pedal because they wanted to go toward and touch it;* they were, in other words, manifesting a simple but presumably genuine type of reaction-formation. A more precise, though less dramatic, statement of the causal sequence here involved would be that these rats ran away from the pedal because of anxiety, which was aroused by the tendency to touch it. In this sense the reaction-formation was indeed a defence against (flight from) anxiety. But since the grill shock continued to mount, its motivational value soon exceeded that of the anxiety and overcame the rat's "pedal phobia," driving the animal back to the pedal and compelling it to press it.

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[19] The Queen in "Hamlet" (Act III, Scene II, Line 240) shows a nice appreciation of this mechanism in her famous remark: "The Lady doth protest too much, methinks."

In other words, in this situation a state of conflict, or "ambivalence," was generated, in which there were recurrently competing impulses, the one an impulse to approach and press the pedal (and thereby escape the grill shock), the other an impulse *not* to press the pedal (and thereby avoid an additional shock from it). In the absence of grill shock, there was no impulse to press the pedal, nor fear of it, and therefore no need to flee from it. As the grill shock mounted, however, this fear of the pedal recurred, and the animal sought to dissipate it by running away from the pedal; but since complete escape was impossible and since the grill shock continued to mount, the fear of the pedal was eventually exceeded by the intensity of the grill shock, and the animal (having no Habit A to regress to) was forced to return to and press the pedal.

The records reproduced in Fig. 1 show some interesting instances of this type of behavior. Before these records can be completely intelligible, however, a brief explanation is due as to how they were obtained. First of all, it should be mentioned that the grill constituting the floor of the apparatus used in this work was "free floating," to the extent that the two metersticks forming the side-rails of the grill were extended approximately another meter at the left-hand end and were there pivoted on a fulcrum, while the right end, not similarly extended, was supported by a system of springs. A thread connected to the right end of the grill communicated with an optical lever which caused a beam of light to register on a piece of moving photographic paper any significant movement on the part of a rat while on the grill. If the rat was at the right end of the grill (near the pedal), the beam of light was deflected toward the left side of the paper (upper side in Fig. 1), and, if the rat moved to the opposite end of the grill, the beam moved to the right (lower) side of the paper. Agitated behavior at any one location on the grill registered simply as rapid transverse oscillations of the beam. The recording system was critically damped to prevent after-vibration. The transverse white lines on the records represent seconds, with five-second intervals accentuated by somewhat wider white lines.

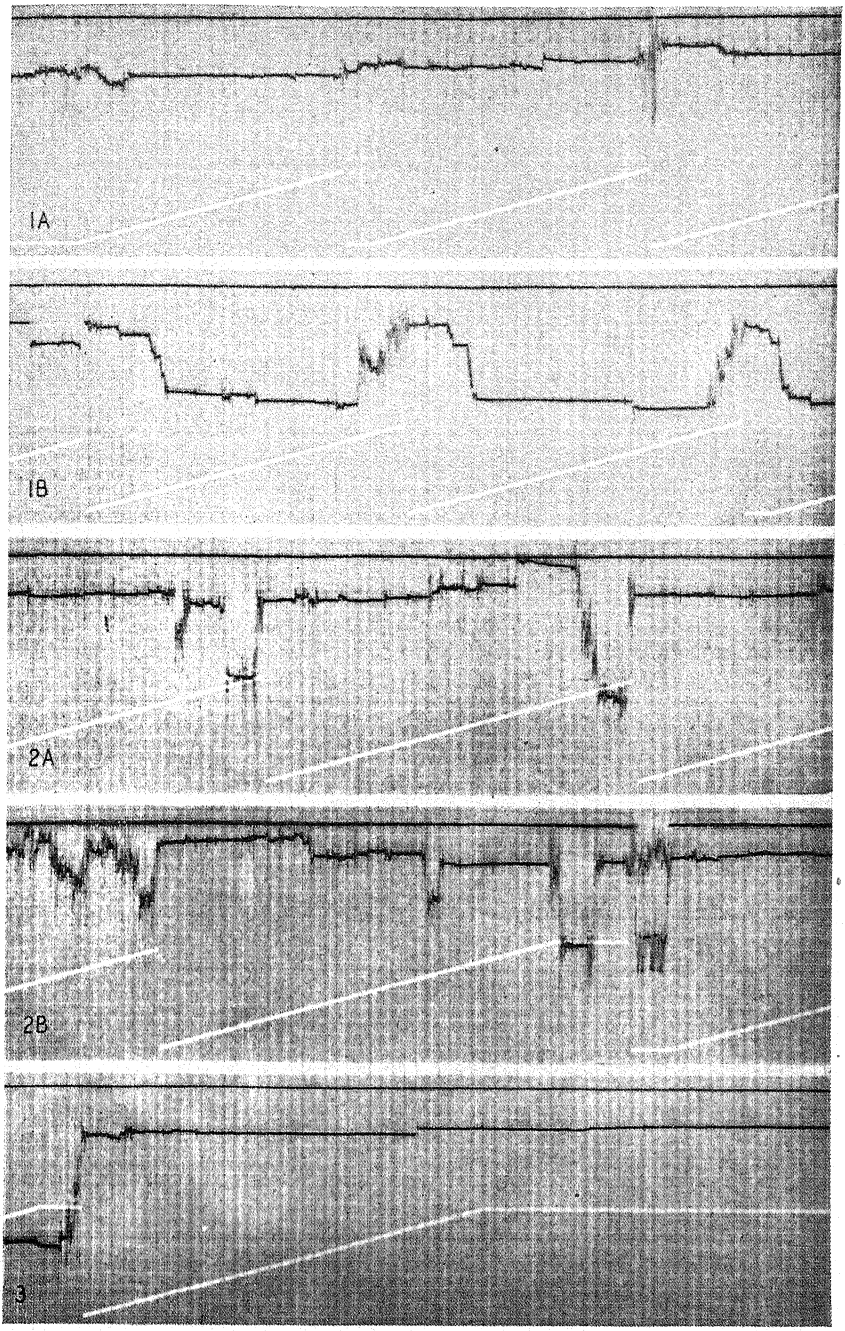

Fig. 1. Records Showing Instances of "Reaction-Formation" in a Conflict Situation in Rats

Records 1A and 1B in Fig. 1 are continuous and show the step-by-step development of reaction-formation in one of the animals (C4) used in the Control Group in the experiment on regression during the session in which shock was for the first time placed on the pedal. It will be noted that the first depression of the pedal, with resulting elimination of the grill shock (represented by the sudden drop of the oblique white lines, indicating grill-shock intensity), occurred without any apparent agitation on the part of the rat (see the irregular black line, made by the light beam controlled by the vertical movements of the grill). The second pedal-pressing reaction was preceded by a slight amount of agitation, as indicated by the oscillations of the light beam just before the shock-indicator drops to zero. Before the third reaction, the rat moved away from the pedal a little distance (slight drop in the black line at beginning of record 1B), and then, after a pause, returned to the pedal and pressed it. This was the first of a series of responses that seemed to involve unmistakable instances of reaction-formation. As the grill shock built up a fourth time, the rat retreated from the pedal end of the apparatus relatively early and remained at the opposite end until the shock had reached an unusually high intensity, at which point the rat returned to the pedal and, after considerable conflict, pushed it. Almost exactly the same thing happened on the fifth presentation of the shock. Somewhat similar behavior also occurred on the five following presentations of grill shock (not shown).

Records 2A and 2B, obtained from another member (C3) of the Control Group, show a slightly different pattern of behavior, but the phenomenon of reaction-formation is no less clearly manifested. On the presentation of grill shock first shown in record 2A (which had been preceded by two initial trials), this animal remained at the pedal end of the apparatus until the shock had become quite intense, then fled to the opposite end of the apparatus, remained there in some conflict for eight or ten seconds, but finally returned to the pedal and pressed it without ado. This pattern of behavior is duplicated, with minor variations, on the three subsequent presentations shown in these two records. On the last of these the rat showed considerable intermittent agitation as the shock built up but stayed at the pedal end of the apparatus (save for an incomplete excursion toward the opposite end) until the shock reached maximum intensity (indicated by the flat, non-ascending portion of the white line). At this point the animal dashed to the other end of the apparatus, remained there for a brief period, returned to the pedal, hesitated a while longer, and then finally pushed it. But that action did not end matters. For some reason, perhaps because of the unusual duration and intensity of the grill shock on this trial, the rat continued violently to push and bat at the pedal for a considerable time after the grill shock was turned off. This is indicated by the failure of the grill shock to start building up and also by the break in the black line at the top of the record (made by a beam of light reflected from a second optical lever attached to the pedal).

Record 3 portrays the behavior of one of the rats (E1) in the Experimental Group at the point when it "regressed." At the extreme left of this record, the grill shock is seen approaching maximum intensity, with the rat at the non-pedal end of the apparatus (indicating reaction-formation). After the shock had reached and maintained maximum intensity for ten or twelve seconds, the animal came, somewhat falteringly, toward the pedal and pushed it. This, however, was the animal's last pedal reaction. It is to be noted that as the next presentation of shock built up to and then remained at maximum intensity, there was not the slightest tendency toward reaction-formation. It was as if the rat had "decided" not to push the pedal again but instead to sit on its hind legs and "take" the shock, i.e., "regress." Since the pedal was dangerous only when there was a temptation to touch it, there was now no reason to fear or flee from it.

These more or less fortuitous observations on reaction-formation are, so far as the writer is aware, the first that have been published concerning this phenomenon in animals. Other instances have undoubtedly been noted in prior experimentation and can probably be multiplied indefinitely by specifically planned attempts to produce them.

SUMMARY

The five major divisions of this paper may be characterized as follows:

Section I reviews the concept of "regression" as it has been developed psychoanalytically and restates it in the terminology of the psychological laboratory.

Section II describes an experiment in which "frustration" of one mode of adjustment, Habit B, caused regression in one group of rats to a previously practiced ("fixated") mode of adjustment, Habit A, but did not lead to regression in another group of rats that had not practiced Habit A before acquiring Habit B.

In *Section III* the hypothesis that regression is "historically conditioned" (by the presence or absence of prior fixations) is supported and contrasted to an a-historical interpretation of this phenomenon; the view that "emotional disturbance," rather than specific frustration, is the precipitating cause of regression is also discussed and criticized.

Section IV is devoted to a consideration of the social, dynamic, and genetic implications of regression. It is concluded that from the definitional standpoint the genetic aspect of this phenomenon is basic.

In *Section V* the psychoanalytic concept of "reaction-formation" is defined and exemplified by human illustrations and by behavior manifested by rats in connection with the study of regression.

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A PREFACE TO THE THEORY OF HYPNOTISM*

by

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Hypnotism has been the object of wonder and speculation ever since its promotion by Mesmer more than a century and a half ago. Oddly enough, the interest shown by ordinary people and by literary men has only rarely been matched among scientists. Science is the outgrowth of human curiosity, but the trained scientist often appears to be the least curious of mortals because he has imposed upon himself such rigorous conditions for satisfying his need. Thus in 1784, when Mesmer's cures were the talk of Paris, a commission of scientists dismissed his findings on the ground that the phenomena, though real, were the result of imagination, hence not of the physical stuff with which science could safely deal. Branded with this scarlet letter, ejected from the better consulting rooms, hypnotism was destined to wander for a hundred years in the slums of medical practice, from which disgrace she was not rescued until the eminent neurologist Charcot picked her out of the gutter, examined her reflexes, and pronounced her worthy of a place in medical research. More recently, through similar good offices by Hull, she has been allowed to enter the portals of experimental psychology, where in the last fifteen years she has begun to live down her reputation, learn the manners of the laboratory, and speak the language of polite science. Yet so recent is her social ascent that even in contemporary studies of hypnotism there occasionally seems to linger the atmosphere of magic and darkened rooms rather than the clear light of reason.

It is psychology's misfortune that hypnotism has only just now been admitted to a place among its methods and problems. For hypnotism is one of the few experimental techniques applicable to human beings whereby it is possible to produce major changes in the organization of behavior. Without discomfort or danger to the subject, provided certain precautions have been taken, it is possible to effect an extensive alteration in those patterns of experience which constitute the self and in those controls of behavior which we know as volition. Had it used a technique which really affected volition instead of the method of fleeting observation pursued with such slender profit by Ach and Michotte, the experimental psychology of will might have survived and prospered. With the aid of hypnotism it is possible to reproduce, artificially and temporarily, the diverse symptoms of hysteria, or with equal ease to make a manageable laboratory model of compulsion neurosis. By the same means, one can create an artificial "complex," make it effectively "unconscious," and, for the first time under controlled conditions with known antecedents, study the irruption of unconscious strivings into the normal stream of behavior and the methods of defense set up against them. Since no two people respond to hypnotic technique exactly alike, an avenue is opened up for the study of individual differences in the control and organization of behavior. Furthermore, hypnosis as a social situation offers an excellent opportunity to understand more clearly the influence one person can have upon another; it provides an experimental method for building out from Le Bon's intuitions concerning group behavior and carrying forward a study which does not grow less important in our time. With the aid of hypnotism, in short, it is possible to investigate a variety of difficult but extremely significant psychological problems. To complain that the more complex processes of human behavior are inaccessible to experimental technique is certainly premature.

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In view of this promise of things to come, it is important to keep a sharp and critical eye roving over the theory of hypnotism. The foundations hastily laid in the days of animal magnetism may give way unexpectedly under the superstructure which is now beginning to arise. The writer believes that certain basic misconceptions have secretly lodged themselves in the theory of hypnotism like termites boring in the sills. The central difficulty, as he will try to show, is the stubborn persistence of mechanical ideas and mechanical figures of speech to describe what is essentially a human situation involving a delicate interplay of human strivings. Modern students of hypnotism, he believes, have rarely taken the trouble to shake out of their minds such notions as animal magnetism, trance states, and ideo-motor action. Despite the sad object-lesson of Charcot, most cautious of scientists who nevertheless came to a series of wrong conclusions because he overlooked the subtleties of indirect suggestion, they have failed to consider exactly what the hypnotist communicates to his subject, exactly how the subject understands it, and exactly what he tries to do about it. Before it can make its proper contribution to the understanding of behavior, hypnotism must become a sophisticated chapter in social psychology. Only then will it be possible to study the nature of the hypnotic state without confusing the issues from the very start.

FACTS WHICH REQUIRE EXPLANATION

To begin with, we shall review briefly the facts that any theory of hypnosis is called upon to explain. What are the characteristics which make hypnosis a perennial object of wonder and amazement? Three things appear to create surprise. One of these is that the hypnotized person can effectuate suggestions lying outside the realm of ordinary volitional control; he can do things that he could not possibly do in the normal state. No less surprising, however, is the way a hypnotized person carries out those suggestions lying within the realm of volition. Stiffening the arm or clasping the hands are actions that anyone could perform volitionally, but in hypnosis they occur without benefit of volition, unaccompanied by the experience of intention, yet at times so strongly that the subject seems unable to arrest them when he tries. Furthermore, hypnotic actions are carried out with a curious lack of humor and self-consciousness, often with an air of abstraction and drowsiness, and they do not seem to have the claim over subsequent memory to which their recency and importance entitle them. Finally, it is a constant source of amazement that these rather drastic effects can be brought about simply by talking. If a person suffered a head injury, took a drug, or was worked into a state of violent emotion, radical changes in the control of behavior would be expected as a matter of course, but no one can believe that mere words entering the ears of a relaxed and drowsy subject can be sufficient cause for the changes which actually take place. It will repay us to consider each of these items in a little more detail.

1. *Hypnotic transcendence of voluntary capacity* is strikingly illustrated by insensitivity to pain. One of the most dramatic chapters in the history of hypnotism is its use by James Esdaile about 1845 as an anaesthetic in major surgical operations. There is still no more convincing way to persuade a sceptic that hypnosis is "real" than by showing that ordinarily painful stimuli can be endured without signs of pain. Carefully controlled experiments designed to exclude every possibility of error have reaffirmed the reality of this phenomenon and have shown that the inhibition extends to such non-voluntary processes as pulse rate and the galvanic skin reaction. Along somewhat different lines, recent experiments show that muscular strength and resistance to fatigue are at least somewhat increased and that recall is substantially improved in consequence of hypnotic suggestions. There is still some reason to believe that older claims concerning the production of blisters, cold sores, and digestive reactions are not without foundation, although the investigation of these topics has suffered from a lack of control experiments. Whatever the ultimate decision upon one or another of the latter claims, there is no danger in concluding that hypnotic suggestion can produce a number of effects

beyond the realm of volition, and that among these effects is an increased control over autonomic functions. The implication of these facts for a theory of hypnotism will be considered in a later section.

2. It is not necessary, however, to depend upon these facts of transcendence in order to demonstrate that hypnotic behavior differs from voluntary. If we confine ourselves to actions which could perfectly well be performed intentionally, there is still a *distinct difference in the way they are performed* in response to hypnotic suggestion. When retrospection is possible, as often happens after relatively light hypnosis, a crucial difference in the accompanying experience can be recognized. Janet reports that a patient, ordinarily suggestible, one day declared that the suggestion "did not take." "I am quite ready to obey you," she said, "and I will do it if you choose: only I tell you beforehand that the thing did not take." This patient clearly recognized the difference between obedience, when one intentionally carries out another person's command, and suggestion, when the action executes itself without the experience of intention, even in defiance of it.

Bleuler, describing his experiences when hypnotized, said, "I felt my biceps contracting against my will as soon as I attempted to move my arm by means of the extensor muscles; once, on making a stronger effort to carry out my intention, the contraction of the flexors became so energetic that the arm, instead of moving outward as I had intended, moved backward on the upper arm." "At other times," he said again, "I felt that the movement was made without any active taking part by my ego, this being especially marked with unimportant commands."

One of the writer's subjects reported himself as "quite marvelling at the way my arm stayed up, apparently without volition on my part. I was still aware of myself off in a corner looking on." Observations such as these could be multiplied indefinitely, but further emphasis is scarcely necessary. It is sufficient to remember that subjects after light trances can almost always give evidence concerning their susceptibility, and that their own spontaneous criterion is whether or not they had the feeling of collaborating in the production of the suggested actions. Though there is a hazy borderland between intentional and automatic acts, in the majority of cases subjects can readily discriminate between the two. Hypnotic suggestion not only transcends the limits of volitional control but also dispenses with volition when bringing about actions which normally lie within those limits.

Subsequent report is frequently impossible because of post-hypnotic amnesia. Even so there is an appreciable difference between hypnotic behavior and the everyday intentional performance of like actions. For one thing, the subject's manner differs from the ordinary: he seems literal and humorless, he shows no surprise and makes no apology for bizarre behavior, he appears entirely un-self-conscious, and very often he acts abstracted, inattentive, almost as if he were insulated against his surroundings. Braid's notion of monoideism serves very well to describe the impression a hypnotized person makes on an outside observer. For another thing, hypnotic behavior does not seem to occupy a proper place in the subject's memory. He disclaims recollection of recent and often very complicated actions which in the ordinary way he seems to have every reason to remember. Thus, whether we choose an introspective criterion or whether we prefer external observation, we are entitled to be surprised at the difference between hypnotically suggested actions and similar actions intentionally performed.

3. *The procedure by which hypnosis is made to occur does not seem adequate to produce such an effect.* So great is this discrepancy that for many years it was customary to assume a magnetic force, an invisible fluid, or some similar powerful agent, passing from the operator into the subject. With the decline of such theories there has been a tendency to argue that the phenomena of hypnosis are after all not unique, that under suitable conditions they can all be duplicated without resort to a hypnotic procedure. It is known, for example, that under stress of excitement and violent emotion people surpass by a wide margin their usual levels of muscular strength and endurance. In like circumstances there is often a considerable degree of anaesthesia for the pain of fairly serious injuries. Hypermnesia occurs during free association, in drowsy states, and in dreams. Many actions which cannot be initiated by themselves without the experience of intention take place quite involuntarily when embedded in a context of other actions, as in playing a game. Perhaps these claims are justified; perhaps there is no phenomenon in the repertory of hypnotic suggestion which cannot be produced in some other way. But, even if this be true, we are not exempt from explaining why the hypnotic procedure, which does not create excitement and violent emotion, which does not put one to sleep, which makes no use of free association, which virtually excludes a context of other actions, and which especially with practice requires very little time, brings about so momentous an effect. It is legitimate to be surprised at the power of hypnotic suggestion.

The task which confronts a theory of hypnosis is roughly defined by the three foregoing peculiarities. Any such theory must explain how (1) the hypnotic procedure brings about (2) the non-volitional performance of acts that ordinarily require volitional assistance and (3) the performance of acts outside the normal range of volition.

HYPNOTIC BEHAVIOR AS GOAL-DIRECTED STRIVING

When Charcot discovered that it was possible to reproduce the symptoms of hysteria by means of hypnosis he surmised that the two phenomena were closely related, indeed that they were aspects of the same underlying condition. This dubious bond, however, was not sufficient to keep hypnosis and hysteria long on an equal footing of medical interest. Thus it happened that the theory of hypnotism lingered at the Salpêtrière stage, while the theory of hysteria advanced steadily from Charcot's time to the present, becoming at last the basis for a new understanding of all neurotic conditions and the starting-point for modern dynamic psychology. The central insight which transformed the theory of hysteria was the idea that symptoms spring from strivings, that neurosis is an outcome of conflict among fundamental impulses rather than a damaged state of the nervous system. Such a view would have been impossible without the still more basic insight that large parts of a person's striving may take place unconsciously, forming no part of his organized picture of himself and his intentions. In psychopathology these once radical notions have gradually worked their way to acceptance.

The benefits of this progress have been largely withheld from the theory of hypnotism. Two concepts, *automatism* and *dissociation,* once useful in understanding hysteria but long since modified, reshaped, and animated with dynamic ideas, have persisted in a peculiarly literal and lifeless form in hypnotic theory. Automatism, invoked to explain the non-volitional character of hypnotic behavior, implies that hypnotized persons are helpless executants of the operator's will as this is expressed in verbal suggestion. Dissociation, called upon to account for amnesia, post-hypnotic phenomena, and those instances when impressions seem to be excluded from awareness or when intentions fail to govern motor processes, implies the subject to be in a state of temporary fragmentation such that different parts of his behavior take place independently without their usual communication. These ideas deserve the respect which is due to first approximations, but their prolonged survival keeps the theory of hypnotism in swaddling clothes when it should be grown to adult stature.

The concept of striving, so useful in other parts of psychology, needs to be applied in thoroughgoing fashion to the behavior of the hypnotized person. This application may be embodied in the following statement: *hypnotic behavior is meaningful, goal-directed striving, its most general goal being to behave like a hypnotized person as this is continuously defined by the operator and understood by the subject.* This point of view is not original with the present writer, having been previously maintained by Rosenow, Lundholm, Pattie, and Dorcus, who have found it more satisfactory in explaining the facts subsumed under both automatism and dissociation. The hypnotized person is seen not as an almost inanimate object, upon which strange effects can be wrought by touching the right levers or tapping the right lines of cleavage, but as a human being who hears and understands and who tries to behave in the different ways which are proposed to him. The adoption of such an hypothesis should not, of course, depend upon one's general preferences in psychological theory. It is the argument of the present paper that hypnotic behavior, on the face of it, can be adequately described and adequately understood in no other way than as goal-directed striving.

1. Automatism. We shall examine first the reasons for preferring the concept of striving to that of automatism. Hypnotists, who write the theories of hypnosis, have preferred to allocate all the striving to themselves. Certain facts, to be sure, have always stood up to combat this attitude of omnipotence. Many people cannot be hypnotized at all, and no careful operator embarks on his enterprise without assuaging the subject's natural fears and building up a feeling of confidence—without trying, in other words, to set at rest antagonistic strivings. It has long been known, furthermore, that hypnotized subjects can successfully resist, often if not always, suggestions which are repugnant to their own deeper tendencies. But in spite of these hints, hypnotists have rested comfortably with the idea that subjects, unless activated to some kind of resistance, functioned as passive instruments through which words were transformed into actions. Such a view is maintained by Hull in the following words:

> A true suggestion response is one in which the subject's own symbolic processes, instead of becoming active either in facilitating or resisting the tendency to action naturally arising from the experimenter's words, remain passive so far as the particular act suggested is concerned. . . . This withdrawal of the subject's symbolic activities would naturally leave his muscles relatively susceptible to the symbolic stimulation emanating continuously from the experimenter.

This theory, which is admittedly a modernized version of ideomotor action, requires considerable bolstering before it can explain how the hypnotist's symbolic stimulation, even when in full possession of the subject's muscles, can bring about effects which the subject's own symbolic activities are powerless to achieve. But it becomes still more inadequate when one recollects that hypnotized persons carry on long trains of activity, improvise details, exert themselves to calculate and remember, and in general produce a complex pattern of behavior for which the initial suggestion is certainly not a sufficient cause or a sufficient explanation. Hypnotized subjects make substantial spontaneous additions to what is stated in the suggestion, a fact which marks the difference between automatism and a goal-directed striving to act as if hypnotized.

The shortcomings of automatism may be illustrated by a few examples which could be multiplied indefinitely. Prince, Burnett, and others have reported experiments in which it was suggested to subjects that they perform difficult mental feats such as adding three-place numbers in their heads or making unusual calculations like the number of seconds intervening between 10:43 and 5:13 o'clock. These and similar calculations were successfully made without awareness when other matters occupied the focus of attention. Even if they had been done without this complicating feature, they would strain to the breaking-point any acceptable meaning of automatism. School teachers will surely not agree that, when they ask children to solve a problem of addition, a "natural tendency" arises from their words which, in the absence of outright resistance, gets the problem solved. To take another example, Erickson has reported a number of experiments in which post-hypnotic suggestions were framed in very general language, the details of their execution being left to the subjects. For instance, a subject was told that he would be bored by a conversation and that while trying to appear interested he would look around for distractions which might be used to end the tedium. The subject executed the suggestion in spite of hindrances interposed by the assistants, choosing an appropriate distraction and calling to his aid unconscious irony and a telling slip of the tongue. Once more the concept of automatism seems totally out of place; the hypnotized person plays altogether too active and too discriminating a part to be regarded in this light.

It is unnecessary to linger over this question except to point out again the backwardness of hypnotic theory and its subjection to outworn concepts. The automatism theory arose at a time when there were supposed to be two distinct levels of behavior, the level of purposive volitional striving and the level of reflex machinery. Since hypnotic behavior clearly did not belong to the volitional level, it had to be classified as some kind of automatism. This arrangement was no more than a recognition of the fact that such behavior took place without the experience of intention, that it seemed to the subject himself to occur of its own accord. In recent years, however, the dichotomy of levels has completely broken down: goal-directed striving no longer necessarily implies either awareness or intention, and nothing, therefore, can be gained by trying to force hypnotic phenomena into the automaton category. Hypnotic theorists may well follow the lead of psychopathologists in putting aside such concepts as ideomotor action.

2. *Dissociation.* In spite of its honorable place in history, the concept of dissociation has a distinctly harmful effect on present thinking about hypnotism. In another place the present writer and Shevach have reviewed in detail the several ways in which dissociation has been invoked to account for the phenomena of hypnosis. They were led to conclude that it aptly describes only certain limited aspects of hypnosis and that it no longer deserves to be considered a key concept for understanding this state. A crucial advance in the theory of hysteria came when Freud added the notion of striving to Janet's dissociation.

> We do not derive the psychic fission from a congenital lack of capacity on the part of the mental apparatus to synthesize its experience, but we explain it dynamically by the conflict of opposing mental forces, we recognize in it the result of an active striving of each mental complex against the other.

The theory of hypnotism is entitled to a similar advance: when the hypnotized person acts in a dissociated fashion it is because the suggestion is so framed that separated strivings are required to carry it out.

Once again we must justify this view by an appeal to hypnotic phenomena, by showing that the behavior which exemplifies dissociation can be better understood as goal-directed striving. At first glance it might seem that if a subject is made blind by suggestion, this fact is well described as a dissociation of his visual system. Similarly, if one leg is rendered insensitive to pain or if the events of the trance are wiped out of memory, it seems not inappropriate to refer to dissociated systems. Again, the post-hypnotic performance of two simultaneous tasks surprises us mainly because of the apparent isolation of functions which we expect will interfere with each other. But a closer scrutiny of just what can be produced by hypnotic suggestion puts the problem in a new light. It is quite easy, for instance, to dissociate not visual function as a whole but simply the perception of one person in a crowded room, or the perception of face cards in a spread-out pack, or any other quite arbitrary fragment of the visual field. Memory for the hypnotic trance is similarly divisible; the subject may be made to forget all but one incident, or to forget only one. For such phenomena the concept of dissociation yields rapidly diminishing returns. When the system which is dissociated ceases to be a plausible biological unit and becomes an arbitrary grouping of items plastic to whatever suggestion the hypnotist happens to make, and freely changeable at his whim, then the hypothesis of striving fits the facts much more closely. "When you suggest an insensitivity," as Lundholm puts it, "your suggestion sets up an impulse to behave as if the insensitivity obtained."

There is still further reason for doubting the value of dissociation and preferring the concept of striving. Dissociation implies a real insulation of one system from another, a boundary marked by amnesia and lack of interaction. It is very easy to show, however, that the dissociated system is not insulated at all but instead exerts a constant influence on the total behavior. To take one example, let five of a dozen white cards on the table be marked with a small cross; then suggest to the subject that he cannot see the marked ones, and ask him to count the cards. His total of seven can be arrived at only if he apprehends the cross-marks and skips those cards in his count. Such experiments work so well that onlookers become distrustful, but the very same subjects can be exonerated from complicity by suggestions that cause them clearly to transcend their voluntary capacity.

It has been argued thus far that the concept of a goal-directed striving to act like a hypnotized person accounts for the facts of hypnosis better than the notions of automatism and dissociation. Automatism was held to be invalidated by the presence of substantial spontaneous additions to what is stated in the suggestions. Dissociation was discredited by two findings: (1) the biologically implausible, arbitrary, changeable nature of the systems alleged to be dissociated, and (2) the active participation of the supposedly insulated items in the total pattern of behavior. It remains to point out certain ways in which the rejected concepts have corrupted the theory of hypnotism and to show that the striving hypothesis makes a favorable difference.

3. Application of goal-directed striving. A typical instance of hypnotic suggestion, often used for purposes of demonstration, is catalepsy or suggested immobility of one of the limbs. The operator declares that the extended arm has become rigid, that it is impossible to move it, that if the subject now makes the attempt he will find he cannot move it. What happens is described as follows by McDougall:

> And now the patient will fail to achieve a forbidden movement not merely because he cannot or will not make the necessary effort, but because, when he tries to make the movement and succeeds in innervating the proper muscles, the antagonistic muscles come into play and prevent the movement. At this stage, then, there is manifested a certain splitting of the personality, a conflict of one part against another: the muscles of one set obey the one part, the conscious willing subject; the antagonistic muscles obey some other part of the personality, which understands and is subservient to the commands and suggestions of the operator.

We are entitled to wonder, in reading this account, whether a dissociation exists anywhere except in the thoughts of the operator. One set of muscles, we can agree, "understands and is subservient to" his suggestions, but we do not need to assume that the other set is differently disposed, for it, too, has precisely obeyed his command to try and his suggestion to fail. Realizing this, we can abolish altogether the fiction that the patient is divided and that the operator has spoken separately to the two parts. It appears instead that the hypnotized person has fully understood the operator's intention and has subserviently enacted a pattern of behavior which consists of stiffening the arm, then trying and failing to bend it. The subject is not dissociated, nor is one part of him functioning as an automatism; he is striving to behave like a hypnotized person, as this has just been defined by the operator.

It is important to notice that in substituting this hypothesis for the older ones we are not explaining away the mystery of hypnosis nor accusing the subject of deception. Often the hypnotized person exhibits surprise, sometimes even alarm, when he discovers that the suggestion has taken effect and that what he conceives to be his will cannot break up the pattern set by the operator. What he does not realize, however, is that it was not "truly" his will to overcome the suggestion. Had it been "truly" his will, he would have succeeded, and been pronounced an insusceptible subject, as happens in many cases. But if the motive of behaving like a hypnotized person is regnant, the operator's command to try to overcome a suggestion calls for a token display of will which the subject secretly hopes will not prevail. There can be no justification for assuming that he does not understand the operator's hopes and intentions, or for supposing that one command can be isolated from the total pattern and attached to a separate part of his personality. The vain struggle of the hypnotized person is an instance of willing when you do not want your will to succeed, a situation in which we need not be surprised to find volition singularly ineffective.

On the other hand, even in this simple example we do not propose to minimize the difference between hypnotic behavior and voluntary compliance in a wide-awake, alert state. The subject's surprise, the changes in his experience of intention, the unwitting character of his collaboration, all serve to remind us that hypnotic behavior, the striving to behave as if hypnotized, takes place in an *altered state of the person.* This assumption becomes still more necessary when we consider those phenomena which transcend the usual limit of volitional control. Our hypothesis declares that anaesthesia, for instance, is a striving to behave as if part of the body were devoid of feeling. We know that in the normal state, let us say in the normal hour at the dentist's, such a striving is doomed to failure. As we shall see in a later section, it is impossible to dispense with the idea of a hypnotic state which permits certain types of striving to achieve unusual success. Our present argument claims no more than that hypnotic behavior, if looked squarely in the face without preconceptions about the state, inevitably appears to be a goal-directed striving.

We shall now pass directly to the end of the hypnotic trance and to the post-hypnotic phenomena which have played so great a part in experimental studies. It is here that the notions of automatism and dissociation have worked their most disastrous effect. Let us consider as an example the experiments of Messerschmidt designed to test the alleged independent operation of conscious and subconscious activities. It was suggested to a subject in hypnosis that upon being awakened he would perform subconsciously a stated mental task. After the awakening he was assigned a second task which in the nature of the case had to be performed simultaneously with the subconscious task, permitting the investigator to measure interference between the two. Erickson and Erickson have recently exposed the serious misconception which underlay this work. Messerschmidt supposed that she could initiate one task by suggestion given in hypnosis, then wake the subject with amnesia and set in motion a second task dissociated from the first. So firm was her belief in the reality of this dissociation that she did not feel it necessary to conceal from the hypnotized subject that a second task would be added after waking. In reality, therefore, she gave a single post-hypnotic suggestion to perform two simultaneous tasks, one of which was described forthwith and the other defined a little later. The net result of this experiment was to disprove dissociation between two tasks wrongfully assumed in the first place to be dissociated. As the Ericksons point out, "to suggest to the hypnotized subject that he will do one task 'subconsciously' and another task 'consciously' will serve only to elicit post-hypnotic performances of both tasks and not a waking performance of one, despite the greater degree of conscious awareness of it, which itself constitutes an additional post-hypnotic response."

This example brings us to the verge of a far-reaching new insight into the nature of post-hypnotic behavior. The argument of the Ericksons' paper, as it happens, rests with the statement that when a subject executes a post-hypnotic suggestion he falls into "a spontaneous self-limited post-hypnotic trance" having various demonstrable properties. Let us take the one remaining logical step and declare that the state which follows upon the operator's command to awaken is itself a suggested state. Hypnotists glibly and none too modestly assume that their subjects wake up merely because they tell them to do so. The command to awaken, however, is a perfect example of post-hypnotic suggestion. The subject is told, in effect, that to behave like a hypnotized person now means to act as if he were wide awake, except that any suggestions already given are to be considered as more nearly embodying the operator's intentions than remarks which he may forthwith introduce. There will be no more suggestions, and the subject must open his eyes, move about, and join in normal conversation. Just how and when he really emerges from the hypnotic state we can say only after we have looked more closely at the nature of that state. At this point we maintain merely that a subject just awakened from hypnosis is still striving to behave like a hypnotized person, that his attempt to act awake, an attempt which is not always entirely successful, must be considered a specimen of post-hypnotic suggested behavior.

Similar considerations apply to post-hypnotic amnesia. Although the degree of forgetting can be much greater than we would expect in the absence of an altered state of the person, the starting point of post-hypnotic amnesia is a striving to behave as if the events of the trance were forgotten. Often when the hypnosis has been light this fact is apparent to the subjects themselves. Following is a sheaf of spontaneous remarks made when subjects with suggested post-hypnotic amnesia were afterwards asked what they could remember of the trance:

(a) I feel that if I thought hard enough I could remember, but I just can't get down to business.
(b) I haven't any inclination to go back over it.
(c) Something is holding back my memory.
(d) My mind doesn't want to think.
(e) I notice I have a lot more trouble trying to recall. I get as far as the eye suggestion and then my thoughts go off into something else.
(f) I do remember but I can't say, I can't think of the word. . . . (Later) I could remember it without being able to say it. Something inside me said, "You know what it is all the time." I partly knew and partly didn't.

These subjects all say essentially the same thing—not that they could not remember, but that they could not make the effort or sustain the activity of remembering. The striving to remember is inhibited by the antagonistic striving to act as if the trance were forgotten, and the subject secretly sides with the latter tendency which he rightly understands as corresponding to the hypnotist's real desire.

It will be seen from the foregoing remarks that the argument of this section runs as follows: the subject is ruled by a wish to behave like a hypnotized person; his regnant motive is submission to the operator's demands; he fully understands at all times, in a well-conducted experiment, what the operator intends; and his behavior is a striving to put these intentions into execution. Let us briefly examine one more experiment the implications of which are radically changed by this hypothesis.

Wells argues that a hypnotized subject of good moral character can be forced by suggestion to commit a real crime. Not wishing to lie to his subject, Wells after putting him into hypnosis described explicitly each step of the experiment. He was told that upon waking he would take a dollar from the experimenter's coat which he would wrongly perceive as his own; he would then forget this episode, but on finding the dollar in his pocket would wrongly recall that it belonged to him and would spend it; finally, he would forget that he had ever been hypnotized. This experiment was completely successful; for several days the subject argued vehemently with accusing friends that he had never been hypnotized and never stolen a dollar. What conclusions can be drawn?

At the beginning the subject understood the whole procedure exactly as the reader understands it; he must have been perfectly aware that taking the dollar was part of the operator's intention. Wells assumes that somewhere along the way the subject's understanding becomes divided, that he loses the initial connection among his ideas, that the taking of the dollar becomes separated from the larger purpose of the experiment and therefore can be viewed in the light of a criminal action. The thing which makes this assumption possible is the concept of dissociation, the idea that by suggesting an amnesia it is possible literally to divide the mind into insulated parts and to hold communication with them separately. If instead we apply the concept of the present paper, it appears that the subject strove to behave like a hypnotized person as Wells defined it to him, that he acted as if he were dissociated because this was part of the definition, and that no proof has here been furnished that a subject could be forced to commit a crime if he had reason to suppose that it really was a crime.

Whatever the merits of this question, it cannot be decided until hypnotism becomes, as was remarked before, a sophisticated chapter in social psychology, with attentive consideration for the interplay of motives and intentions between subject and hypnotist. The subject knows what is going on, infers the intentions and hopes of the operator, and he does his best to oblige. Even when we urge him beforehand to resist us, or afterwards coax him to remember what we have ordered him to forget, he decides as best he can what we really want and he strives to give it to us.

The hypothesis of goal-directed striving, however, does not and cannot alone explain the phenomena of hypnotism as these were outlined in a previous section. It cannot tell us how the hypnotized person transcends the normal realm of volition, how his experience of intention is altered, or how the procedure for inducing hypnosis leads to such important changes. So far we have argued only that hypnotic behavior looks like a goal-directed striving; we must now consider how this striving achieves its unexpected degree of success.

Hypnosis as an Altered State of the Person

In a recent review of experimental hypnotism P. C. Young calls attention to sharp differences of opinion as to the nature of the hypnotic state. In one camp he places those who adhere to a conational hypothesis similar to the one advanced in the previous section. On the other side he puts those who contend that the profound organic changes which result from hypnotic suggestion argue for an important alteration in the behavior mechanism. The factors involved, Young believes, can be diagnosed better "from experiments on simple sensory experience than from those on the more spectacular, but more complicated, autonomic processes." Reviewing a number of contradictory reports, he finds that "the weight of testimony seems to point to an actual change in the content of sensed stimulations as the result of hypnotic suggestion, rather than merely to a changed attitude toward the stimulations sensed." Much evidence has been accumulated showing that the hypnotized person can execute suggestions which in a normal waking state would lie well outside the realm of his volitional control. These findings offer a formidable obstacle to theories which depend wholly on conation. "After all," Young continues, "these explanations amount to saying that the subject is playing a game with the experimenter and with himself. They would put the inhibition or dissociation (if dissociation is admitted) at a very high integrative level." In view of the kind of changes which can be produced, it seems to him unlikely that the explanation belongs at this level.

All theories which involve an interaction of factors are destined to pass through a long adolescence of storm and stress. The human mind seems to abhor complexity, preferring to nail its colors to the mast and go down fighting for some simple and sovereign explanation. Arguments over body and mind, heredity and environment, biology and culture, appeal to something in human nature which is not the shrewd and dispassionate search for truth. The theory of hypnotism will never prosper until, outgrowing the dialectic dichotomy of "striving" and "state," it considers the possibility of interaction. There is no law of nature which declares that hypnosis may not be at one and the same time a goal-directed striving and an altered state of the organism. On the contrary, it is upon this view of the matter that we should insist, because only in this way is it possible to reconcile the otherwise conflicting data. The hypothesis of goal-directed striving, moreover, gives us a new and valuable perspective in which to study the hypnotic state. It is to be regarded as a state in which certain kinds of striving, normally associated with volition, take place without the usual volitional experiences and achieve effects outside the usual realm of volition. Its chief peculiarity is its effect on goal-directed striving.

Ever since the concept of magnetic force fell into disrepute, it has been assumed that hypnotic technique created an altered state of the person. At one time or another a long list of distinguishing characteristics has been assigned this state, but here modern research has taken a heavy toll. Reviewing the literature in 1926, Young dismissed catalepsy, posthypnotic amnesia, and exclusive rapport of subject with operator, showing that all of these are the result of suggestion and do not necessarily appear if appropriate suggestions are not made. To the discard pile Hull in 1933 added the lowering of sensory thresholds, pointing out that, while subjects believe themselves to possess whatever heightened sensitivities have been suggested to them, actual measurement fails to reveal a significant departure from normal levels. Even more important than these findings is the demonstration, through a convincing series of experiments, that hypnosis is not a form of sleep. Older writers, bent upon reassuring timid clients, made much of the outward likeness between sleep and hypnosis, and suggestions of drowsiness appear in the great majority of techniques for inducing the latter state. In reality, however, there is little resemblance between the two. In a very neat experiment Bass has shown that the knee jerk and the voluntary pressing of a key in response to a bell, actions which disappear quite early in true sleep, remain unchanged throughout a deep hypnotic trance. Other investigators have measured pulse and respiration rates, brain potentials, and electrical resistance of the skin in hypnotized persons, finding that none of these measurements shows the changes characteristic of sleep. Physiologically the hypnotized subject is awake, not asleep, a fact which appears less remarkable when one recalls the feats of problem-solving and calculation which have been known to take place in hypnosis.

The trend of research has thus been to denude the hypnotic state of its once extensive vesture of distinguishing characteristics. What remains of its former majesty? "The answer is simple," writes Hull: "the only thing which seems to characterize hypnosis as such and which gives any justification for the practice of calling it a 'state' is its generalized hypersuggestibility. The difference between the hypnotic state and the normal is, therefore, a quantitative rather than a qualitative one." Responsiveness to suggestions emanating from other people, to "prestige suggestion," is a very common phenomenon, but this is not the distinguishing mark; "the essence of hypnosis lies in the fact of *change* in suggestibility . . . in the experimental fact of a *shift* in the upward direction which may result from the hypnotic procedure." "Hypnotic hypersuggestibility has a relative and not an absolute significance."

In these statements hypnosis is reduced to its barest possible meaning: a state of relative hypersuggestibility brought about by certain artificial techniques. Simple as it sounds, this definition easily covers the essential phenomena: insensitivity to pain, increased muscular capacity, amnesia and hypermnesia, non-intentional performance of actions usually requiring volition, all these are instances of hypersuggestibility. But it would be unduly hopeful to suppose that the elevation of this particular unifying concept would much simplify the task before a theory of hypnotism. The concept of suggestion may be admired for its versatility but not for its defining power. If by calling hypnosis suggestion we brought to our aid a number of well-formulated facts concerning non-hypnotic phenomena, our thinking would be considerably straightened and broadened. Unfortunately such is not the case, and the theory of hypnotism is left to face its task much as before.

There are two ways in which the nature of the hypnotic state may be profitably investigated. The first way is to study its characteristics directly, asking ourselves how it differs from the normal, comparing the range and quality of hypnotic behavior with that of a person trying to execute voluntarily the same acts. The other way is to consider how hypnosis is brought about and how it is terminated, to examine the significance of the procedure and to deduce therefrom the nature of the state produced. Inasmuch as both speculation and experimentation have been more active along the first than along the second line, it is appropriate to emphasize the benefits which might accrue from a more searching scrutiny of the hypnotic procedure. We shall first, however, look briefly at the better-tilled field, undertaking not to review it but merely to point out, in the spirit of a preface, the problems involved and the apparent trend of the findings.

The most impressive phenomena of hypnosis are those in which there is a transcendence of voluntary capacity. The high attracting power of these phenomena has drawn attention away from the true nature of the problems and led to fantastic speculations about the release of hidden powers. Little has been said about the limitations of hypnotic behavior, the things which are done less well in hypnosis than in the normal state. The hypnotized person lacks alertness and humor; he is literal and serious in his execution of the operator's wishes, seems to have lost all sense of the ludicrous, pursues one goal with disproportionate intensity, and pays little attention to matters and impressions which lie outside this purpose. He seems to have a contracted frame of reference, and above all he lacks initiative, lying perfectly quiet and even dropping off to sleep if the operator stops proposing lines of action. It may well be that suitable tests of performance demanding alertness, decisions, and quick complex judgments would outline a sphere of achievement in which hypnotized persons made reliably poorer scores. The hypnotic state is not a super-state; it is simply an altered state.

Perhaps the best way to conceive of this problem is to use a topographical analogy. Suppose we draw two regions, one including the behavior which can be produced, the functions which can be controlled, in the hypnotic state, the other enclosing the capacities of the normal state. These two regions, of course, will overlap, but not completely coincide; at either edge of the diagram will be a zone which belongs to only one region. To this statement we may add the conception that in light hypnosis the overlap with the normal region is at its greatest, growing progressively less as the subject passes toward profound somnambulism. It may now be stated that the task of research is to establish the detailed geography of these regions, to find out on the one hand exactly what capacities can be transcended, on the other what powers are distinctly reduced, and in both cases the measurable extent of these changes.

Research into these matters has not been idle; at least one important general statement can be drawn from the accumulated results. It appears to be approximately true that the boundary of functions which can be more effectively controlled under hypnosis lies parallel to the boundary for normal volition. Certain functions which lie wholly outside the realm of volitional influences are also inaccessible to hypnotic suggestion, but others which may be regarded as semi-voluntary can be surprisingly transcended in the hypnotic state. Let us take as an example Sears' investigation of hypnotic anaesthesia. Here the attempt was made to abolish various normal reactions to a painful jab on the calf of the leg by suggesting that the leg was anaesthetic. Verbal report, facial flinch, and changes in respiration, all of which are at least partly voluntary, were almost completely eliminated, but the characteristic rise in pulse rate was reduced only 77 per cent, variability of pulse 50 per cent, and the galvanic skin reaction no more than 22 per cent. These achievements of hypnotic suggestion, of course, greatly exceed the capacities of the normal state; in a control experiment Sears was able to show that "voluntary inhibition of reaction to pain does not present a picture even remotely resembling the reaction under true hypnotic anaesthesia." But it will be noticed that the further one gets from a volitional function the smaller is the effect of hypnotic suggestion. A similar trend can be observed in experiments on the extent of post-hypnotic amnesia. Hull, under whose direction the experiments were performed, summarizes the results as follows:

> [The subjects] uniformly deny any recollection of trance events, *i.e.,* as tested by general symbolic recall, amnesia is 100 per cent. By detailed specific recall this amount of amnesia is reduced for nonsense material probably to about 97 per cent. By the relearning method amnesia falls to approximately 50 per cent. Manual habits learned in the stylus maze show by the relearning method an amnesia also of about 50 per cent. With specific training in arithmetical addition and general training in memorizing nonsense material the amount of post-hypnotic amnesia is reduced to zero.

Thus as one passes from specific learned content to the more remote results of practice, the effectiveness of hypnotic suggestion declines. To this conclusion we may add one more observation, that of Lundholm, who showed that with suggested blindness a flashing light elicited the usual pupillary reflex but no eye-movements, whereas with suggested hallucination of a flashing light there were eye-movements but no pupillary reflex. The trend of all these observations is clear. Hypnotic behavior can in many respects transcend the limits of volitional control, but it remains somehow related to those limits; its own limits seem always to lie at a not-too-great distance beyond those of volition.

We have seen in this section that hypnosis must be conceived as an altered state of the person the chief peculiarity of which is a change in the success achieved by certain kinds of striving. If in some respects the hypnotized person is inferior to his best normal self, in others he distinctly transcends the usual boundaries of volitional control. But this transcendence appears less remarkable, and perhaps ultimately less bewildering, when we notice that it consists of a roughly measurable pushing out of those boundaries in certain directions rather than a capricious disregard for their existence. The hypnotic alteration of the person is neither unintelligible nor immeasurable.

Significance of the Procedure for Inducing Hypnosis

It is difficult to think about hypnosis without thinking about the procedure by which it is induced and terminated. A close inspection of these procedures might well be expected to reveal the nature of the hypnotic state. That it has not already done so is doubtless due to the extraordinary variety of methods for which success is claimed, the wide range of techniques to which one or another operator pins his faith. The first task is to factor out the features which are common to all these methods. There appear to be at least two features which are almost if not quite universal, which certainly assist the process of inducing hypnosis even if they are not completely indispensable: these are (1) relaxation and the reduction of sensory input, and (2) the presence of an operator who administers the suggestions. So obvious are these conditions that they often escape the searching examination they deserve.

We may pause for a moment to defend the assertion that these factors are well-nigh universal in hypnotic techniques. As regards the first, it is true that people can be hypnotized in a standing position and without closing the eyes. Hull, in fact, considers such a method under certain circumstances "perhaps the most effective of any," but this effectiveness depends on the following instructions:

> I direct him to look steadily into my eyes and to think of nothing but sleep, to relax his muscles all over, even so much that his knees bend a little and his legs scarcely hold him up.

Relaxation is thus included, even with the upright posture, and reduction of sensory input is achieved by steady optical fixation. Wells uses a technique designated "waking hypnosis," the success of which must be apparent to all who have witnessed it, but even here, although suggestions of drowsiness and sleep are scrupulously avoided, the subjects are instructed to close their eyes and to attend carefully to the operator. It can be safely stated that nine out of ten hypnotic techniques call for reclining posture, muscular relaxation, and optical fixation followed by eye closure. The presence of an operator who administers the suggestions is similarly well-nigh universal. The possibility of auto-hypnosis cannot be denied, but there are very few procedures for self-hypnosis which do not start with training by an operator. It is apparently much easier to talk yourself into getting better and better if someone else has first suggested it to you.

Let us now briefly rehearse a standard hypnotic technique to see exactly what takes place. In the first place, the operator must make the subject willing to participate in the event; he must make sure of the favorable motives without which hypnosis cannot take place, for he is certain to fail "if a pattern of needs is aroused which dispose the subject unfavorably toward hypnosis." Having elicited a willingness to be hypnotized, he asks the subject to lie down and relax his muscles, perhaps darkens the room, fatigues and then excludes vision, and lowers his voice to a quiet monotone. Vision thus becomes inoperative, kinaesthesis is much reduced by immobility, and audition is more or less focused on a single stream of impressions. The operator meanwhile talks about drowsiness and sleep; but it is doubtful whether these remarks function as true suggestions, since the steps already taken are exactly those which anyone might use to permit drowsiness and sleep to overtake him in their own natural way. The onset of a little real drowsiness would appear to be an indispensable condition for producing hypnosis for the first time, although trained subjects can pass into the state without these leisurely preliminaries.

At this point the operator introduces his first unmistakable suggestion, such as that the eyelids are stuck down and cannot be opened. If on trial this proves to be the case, the subject is regarded as being in the hypnotic state. It should be observed, however, that there are not two but rather four possible outcomes of this first real suggestion. The first is that the subject will open his eyes when challenged to try, in which case it will be admitted that hypnotism has failed. Another outcome is that the subject will make the attempt, perhaps in a rather vigorous manner with visible movements of the surrounding musculature, but fail to open his eyes. A third possibility is that the subject will make no apparent effort to open the eyes; he will have to be urged repeatedly to try, and in the end make perhaps some slight flicker in the surrounding muscles as a token to satisfy the operator. These two outcomes correspond to what the author has called elsewhere the active or alert and the passive type of hypnotic trance. The subject in the passive state may be regarded as essentially too drowsy to move; drowsiness has progressed far enough so that he is distinctly disinclined to be disturbed. The fourth outcome is a total failure to respond; the subject acts as if he had heard nothing, and awakens with a start when gently shaken. He has been really asleep, hence not in any kind of hypnotic state, and his amnesia will be complete.

It is implied in this description that there is a continuum from the wide-awake state through drowsiness to sound sleep. The hypnotist, in order to succeed, must bring his subject a short distance along this continuum to a light drowsiness, but must stop him there and prevent him from getting more sleepy; otherwise he will go into the passive trance or drop off to sleep altogether. We know from many studies that the hypnotized person is not asleep, that his bodily state is not that of real sleep. Nevertheless, it appears that a dash of drowsiness, so to speak, is essential in producing the hypnotic state, and in no other way can we explain the reported good effects of sedative drugs when other methods of hypnotizing have failed.

We are now in a position to understand the importance of the hypnotist and to explain why he is all but indispensable in bringing on the hypnotic state. Apart from the instruction he gives and the motivational state he brings about—both of which might be essentially present without him—he serves the very vital purpose of keeping the subject awake, allowing him to relax and give himself up to drowsiness but at the same time "pegging" this drowsiness in a light stage and preventing a lapse into real sleep. A person may learn through practice to catch himself at this state and thus become adept at self-hypnosis, but a beginner almost invariably needs assistance if he is to arrive and remain at that curious point halfway between sleepiness and alertness. The first function of the hypnotist, then, is to keep the subject from sliding around on the sleep continuum.

This he does in the course of executing his second function, which is to keep up a moderate degree of auditory input while the other senses remain relatively closed. Subjects rightly complain that they do their best to go to sleep but are prevented from doing so by the operator's stream of talk. We must remember at this point that it is not a matter of indifference what the operator says: the urgent character of his words, their power to keep the subject attentive in spite of his drowsiness, lies not in their volume, not even in their relative volume, but in the fact that they consist of requests, commands, and suggestions which in turn convey the wishes and intentions of the hypnotist. By the measures which he takes to exclude distraction, and especially by his words, the operator tries to maintain a state of mono-motivation, a focal press of dominance, and the subject is given little alternative except to continue the deference which made him susceptible in the first place or else to display a resistive autonomy which under the circumstances could hardly be distinguished from aggression. In short, the operator's words, far from being lifeless syllables, are loaded with his hopes and wishes; they act on the subject with the force of another's hopes and wishes which through him may be either gratified or frustrated. We cannot understand hypnosis without bearing in mind the motivational field in which it takes place. The dual function of the operator is to prevent the deepening of drowsiness and to keep regnant the wish to behave like a hypnotized person.

The importance of relaxation and the restriction of sensory input probably lies in their relation to drowsiness. When we know more about drowsiness and can state more precisely the changes which go with it we shall be able to advance considerably our knowledge of the hypnotic state. Here we shall offer only one very general hypothesis: the peculiarities of hypnotic behavior discussed earlier, the involuntary feeling, the literal, humorless manner, the un-self-consciousness, inattentiveness, and poor subsequent memory, can all be plausibly related to the changes which take place in drowsiness. When a person is drowsy, his images and experiences tend to become more vivid, more concrete, and more absolute. Abstract processes and complex frames of reference seem to be highly vulnerable to fatigue. The operator avails himself of this vulnerability, reduces as far as possible the perceptual supports which might serve to sustain a wider frame of reference, bids the subject relax his mind as well as his body, and thus encourages drowsiness to take a small toll from the higher integrative processes.

It is significant that one of the commonest complaints of unsusceptible subjects is that they could not forget the situation as a whole, could not stop thinking how absurd it was to be lying there on the couch, what their friends would say afterwards, how unreasonable the suggestions sounded, how humiliated they would be to have their wills overcome. Such comments, in so far as they are not simply signs of unfavorable motivation, imply that the frame of reference has refused to contract, that in spite of external circumstances there remains an internal alertness to "other considerations" which is the opposite of drowsiness and the enemy of successful hypnosis.

It would be profitable to follow up the idea that hypnosis involves some slight degree of functional decortication, of a kind, however, which is produced by relaxation and quieting rather than by drugs, operation, or strong emotion. All thinking along this line must be limited, of course, by two facts, that the hypnotized person is in no true sense asleep and that he remains capable of fairly active mental operations. There would appear to be enduring value, nevertheless, in the hypothesis of lowered functioning, of activity a little removed from the alert, wide-awake, self-conscious level which we ordinarily consider the best of all possible mental states. Physiology has accustomed us to the idea that the highest centers are mainly inhibitory in function, so that their withdrawal tends to release the energy of more primitive processes. Psychopathology has accustomed us to the notion that unconscious strivings may possess a peculiarly direct communication with the autonomic system, as in the psychosomatic disorders, and even with certain functions of the cerebrospinal system, as in conversion hysteria. It may well be that hypnotic behavior lies somewhere between the level of volition and the level of unconscious strivings, enjoying some of the privileges of the latter in the way of extended control. The two hypotheses here discussed, the creation of an unusually weighted motivational field and the production of a moderate degree of disinhibition, while they by no means exhaust the problems of hypnotism, point the direction in which the scientific caravan should move.

In an earlier section it was proposed that the manner of terminating hypnosis required rather drastic reconsideration. The command to awaken must be regarded as itself a post-hypnotic suggestion which constrains the subject, still docile to the operator's wishes, to start acting as if he were awake. We need not assume that he issues from the hypnotic state in the fraction of a second required for the operator's signal. But the new suggestion which the hypnotist has unwittingly given involves certain conditions which of themselves gradually wipe out the hypnotic state, the more rapidly, no doubt, when there are no further post-hypnotic suggestions waiting to be performed. Upright posture must be assumed, the eyes must be opened, conversation must be made, and the hypnotist relinquishes his position as sole speaker and focal press of dominance. This withdrawal of all the conditions deemed essential for producing hypnosis in the first place makes it impossible for the subject to keep his frame of reference contracted and to remain in the hypnotic state, even though, as is often the case, he would prefer to do so. Just as it is the hypnotic situation as a whole, rather than specific suggestion, which puts the subject gradually into the hypnotic state, so it is the post-hypnotic situation as a whole, rather than the command to awaken, which gradually brings him out of it.

SUMMARY

In the forward march of psychological theory hypnotism has fallen to the rear, unable to shed the conceptual baggage of a past age. The present paper has attempted to lighten this load so that hypnotism will be encouraged to take its place as a chapter in social psychology and as a means of investigating the structure of personality.

A theory of hypnotism is called upon to explain the following facts: (1) that the hypnotized person can transcend the normal limits of volitional control, (2) that he behaves without the experience of will or intention, without the self-consciousness, and without the subsequent memory which under the circumstances one would expect, and (3) that these changes in his behavior occur merely because the hypnotist says so.

As a first step it is proposed that hypnotic behavior be regarded as a meaningful, goal-directed striving, its most general goal being to behave

like a hypnotized person as this is continuously defined by the operator and understood by the subject. Such a view replaces the older notions of automatism and dissociation which have persisted in a peculiarly rigid and unenlightened form to the great detriment of hypnotic theory. Reasons for preferring the hypothesis of goal-directed striving are found by a direct inspection of typical hypnotic phenomena. The application of the hypothesis puts several of these phenomena in a quite new light, particularly the post-hypnotic behavior which has played such a prominent part in experimental studies. The subject, it is held, is ruled by a wish to behave like a hypnotized person, his regnant motive is submission to the operator's demands, he understands at all times what the operator intends, and his behavior is a striving to put these intentions into execution. In order to explain the peculiar character and surprising success of the hypnotic striving, however, it is necessary to conceive of hypnosis as an altered state of the person.

The hypnotic state can be profitably investigated in two ways: (1) directly, by comparing the range and quality of hypnotic behavior with that of a person trying to perform voluntarily the same acts, and (2) indirectly, by considering how it is brought about and terminated. The first problem has been the topic of considerable investigation in which it is possible to discern a definite and important trend: hypnotic transcendence of the usual boundaries of volitional control consists of a roughly measurable pushing out of those boundaries in certain directions rather than a capricious disregard for their existence. As one passes from semi-voluntary functions such as respiration and eye-movements to completely involuntary acts like pulse, pupillary reflex, and galvanic skin response, the effects of hypnotic suggestion grow smaller.

The procedure for inducing hypnosis has received little attention as a means of studying the nature of the hypnotic state. The two factors which appear to be common to all techniques are (1) relaxation and a reduction of sensory input, and (2) the presence of an operator who administers the suggestions. The operator is indispensable because he prevents the subject from passing from light drowsiness into real sleep and because he maintains a continuous motivational pressure, a focal press of dominance. Relaxation and the restriction of sensory input are conducive to drowsiness, and this in turn may be conceived as a slight lowering of functional level the effect of which is disinhibitory, so that in certain ways the range of actions accessible to the hypnotic striving is increased. It is at all events along such lines, keeping step with advances in psychopathology, physiology, and motivation, that the theory of hypnotism should press forward.

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HYPNOSIS AND THE ALPHA ACTIVITY OF THE ELECTROENCEPHALOGRAM *

by

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ONE of the present writers, (Lu.), has reported observations to the effect that hypnotically induced dysfunctions of various kinds are not associated with any modifications of reflexes. Thus, for instance, a subject in whom complete functional blindness has been induced by hypnotic suggestion will react to light with perfectly normal contraction of the pupils; a subject who experiences a hypnotically induced hallucination of strong light will not present any contraction of the pupils when the signal initiating the hallucination is given; a subject in whom complete flaccid paralysis of both legs has been hypnotically induced will show no modification of the patellar reflex.

Observations of the kind mentioned stirred our interest to inquire whether anaesthesias, on the one hand, and hallucinations, on the other hand, would be associated with physiological modifications on the highest level of the nervous system, the cortical level. We thought that, if that were the case, the physiological modifications ought to express themselves in the presence or the absence of the alpha rhythm of the electroencephalogram. Studies were made of alpha waves during periods of functional blindness and of functional deafness and during periods of positive hallucinations in the fields of vision and audition.

Prior to the present inquiry, Loomis, Harvey, and Hobart have studied the behavior of the alpha rhythm during periods of hypnotically induced blindness. Suggestion was given to the one subject used that alternatingly every 15 seconds he could see and would be blind. His eyelids were kept open with adhesive tape throughout the experiment. In every case "trains appeared when the suggestion was made that he was *blind* and in every case they ceased when the suggestion was made that he could see. This was true both when there was a light in the room and when the room was in total darkness."

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More distantly related to our inquiry was the finding that "the trains of a normal person, unhypnotized and who never had been hypnotized, tested in a completely dark room, will stop if it is suggested that he sees something, a light or a face." As will be seen, the results of our own investigation are not in harmony with the ones referred to.

Three subjects were used, two undergraduate women students and one graduate woman student, all of Duke University. All three had very good scholastic records. Throughout the experiments the registration of the alpha rhythm was made by (Lo.), while (Lu.) was the operator in the hypnotic procedure. Prior to the experiments the latter had hypnotized all the subjects ascertaining that the effects desired could be produced. All the subjects had complete amnesia for any suggestion given during hypnotic state. As a further check on the effectivity of the suggestions, memory was recalled by special suggestion after each experimental period; this gave the subjects an opportunity to testify as to their experience. In all instances, the testimony indicated without doubt that the suggestions had been effective. The procedure of hypnotizing the subjects was very simple and had been worked out and standardized by (Lu.) during many years. Only the spoken word was used, and the vocabulary was extremely restricted.

In inducing the hypnotic state the following oral address was used: "Sleep, deeply and quietly . . . deeper. . . . I count to five and as I count you go into a deeper and deeper sleep. One, two, three, four, five. . . ." The awakening of the subjects was always effected by the following suggestion: "I am going to wake you up. . . . I count to three and on three you wake up. One, two, three."

The suggestion effecting functional blindness was as follows: "I am going to wake you up. As you open your eyes you will find that this room is completely dark. You will not be able to see anything whatsoever. It will remain dark until I snap my fingers. Then it will be light again. I count to three and on three you wake up. One, two, three." (During the period of functional blindness, before (Lu.) snapped his fingers, he flashed a light several times into the eyes of the subject. This elicited neither eye-turning response nor winking, and the subjects seemed to be completely irresponsive except for the contraction of the pupils.)

The suggestion effecting functional deafness was as follows: "In a little while I shall say *Now*. From that moment on, you will be unable to hear any sound or voice except my own voice. This condition will last until I say *Now* a second time. Then you will again be able to hear. *Now* . . . *Now*." (In the periods between the first and the second *Now*, (Lo.), who was outside the room, whistled strongly, spoke to the subjects in a loud voice, and asked them to solve simple mathematical problems.

(Lu.), inside the room, observed that the subjects made no response of any kind to the sounds mentioned.)

The suggestion effecting a visual hallucination was as follows: "In a little while I shall say *Now*. The moment I say *Now* you will see through your closed eyelids a very intensive light. This light will remain until I say *Now* a second time, when it will disappear. *Now*. . . . *Now*."

The suggestion effecting an auditory hallucination was as follows: "In a little while I shall say *Now*. The moment I say *Now* you will hear an orchestra play 'The Star-Spangled Banner' clearly and distinctly. The orchestra will continue to play until I say *Now* the second time. Then it will cease. *Now*. . . . *Now*."

Electroencephalograms were taken on each subject before the experiment began. Simultaneous records from the frontal, the parietal, and the occipital regions of each side were obtained with a six-channel electroencephalograph, built by Mr. A. M. Grass. The pattern in each case consisted of waves of average amplitude, stable frequency, and regular form. Fortunately, the alpha rhythm was well developed over the occipital region of all subjects. Five minutes of vigorous overventilation failed to produce any material change of the pattern.

Comparable results were obtained in each of the experiments; these can therefore be reported collectively. Before the subjects were hypnotized it was tested whether or not the alpha waves would disappear in the usual way upon opening of the eyes or during noise, talking, whistling, etc., outside of the experimental room. In each case the alpha rhythm was abolished by these procedures.

In contrast to this, when hypnosis began, the talking of the hypnotizer failed to influence the alpha pattern after only a few seconds. The alpha waves became less distinct or completely disappeared every time a new suggestion was offered for the first time. When this suggestion was repeated, however, no influence upon the alpha rhythm ensued.

The experiments with each subject progressed in the following order: the alpha waves were observed (1) during suggested blindness, (2) during visual hallucination, (3) during suggested deafness, and (4) during auditory hallucination.

Blindness having been suggested, the alpha waves notwithstanding completely disappeared upon opening of the eyes. No eyelid flickers were present during this period as shown by the frontal records remaining undisturbed from eye or lid movements. When blindness was removed, the occipital record, of course, did not change at all, while the frontal records now showed the customary signs of eye and lid movements.

In contrast, the alpha waves were not abolished when a strong light was suggested to be seen by the subject through the closed eyelids. In one experiment it seemed as if the alpha rhythm was affected. However, the subject later reported that the impression of light had been so radiant as to cause pain. In subsequent experiments, therefore, the suggestion of absence of pain was combined with the suggestion of visual hallucination, and no disturbance of the alpha rhythm occurred.

In none of the experiments did we ever obtain different or even questionable results. Hypnotically suggested light does not produce the abolition of the alpha rhythm, nor does suggested blindness prevent it.

The observations during disturbances in the auditory sphere gave equally consistent results. When deafness was suggested, talking to the subject, whistling, or sudden noises produced immediate disappearance of the alpha waves for the duration of the interference. Alpha waves promptly returned when the noise ceased. Effective suggestion to the subject of auditory hallucinations did in no manner change the regular train of the alpha rhythm.

The findings in these experiments tend to convince us that the cortical electro-activity is not affected by hypnotic modification of seeing and hearing. We are unable to explain satisfactorily the discrepancy between our results and those of Loomis, Harvey, and Hobart.

A recent article by Lemere lends support to our findings. Several hysterically blind persons whom he examined, showed no alpha waves when their eyes were open, but the rhythm promptly appeared when they closed their eyes. We, too, observed a case of hysterical blindness who was finally cured by hypnosis. His alpha activity behaved in the same way as described by Lemere, and as the experiments just described should lead one to expect.

The appended table summarizes our observations. It indicates the presence and absence of alpha activity in the electroencephalogram under "normal" conditions and during periods of hypnotic modification of vision and audition; also the presence and absence of the alpha activity during hysterical blindness.

	State of Environment	
State of subject	*Visual or Auditory Stimulation*	*Absence of Stimulation (eyes closed, silence)*
Normal waking condition	Absent	Present
Hypnotic blindness	Absent	
Visual hallucination		Present
Acoustic hallucination	Absent	Present
Hysterical blindness	Absent	Present

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AN EXPERIMENTAL APPROACH TO DREAM PSYCHOLOGY THROUGH THE USE OF HYPNOSIS *

by

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INTRODUCTION

BECAUSE of the difficulty of investigating emotional processes experimentally, the investigation of dream psychology has progressed little since the publication of Freud's Interpretation of Dreams, a fact which Freud noted in 1933 when he complained that analysts 'behave as though they had nothing more to say about the dream—as though the whole subject of dream theory were finished and done with.' He called attention, as an exception, to the pioneer work of several Viennese investigators who, using hypnosis (Schrötter) and other methods, had made a start in the experimental confirmation of the theory of dream symbolism. Unfortunately this research was not pursued. The last two decades have seen considerable development of hypnotic techniques in the study of various unconscious processes. Erickson, Kubie, Erickson and Kubie, Luria, Eisenbud, and others have contributed to this literature.

To develop a method of dream study which might be more objective than the interpretive technique used in analytic therapy, a group of average college students were used as hypnotic subjects. With them as subjects the following problems were investigated:

1. *The capacity of normal individuals under hypnosis to understand dream language and the factors which might influence this understanding.* In hypnotic and other dissociated mental states, individuals show capacity for understanding and interpreting the unconscious psychic productions of others. It is well known that schizophrenic patients are able to interpret dreams. Some artistic individuals manifest a special faculty for understanding the unconscious import of artistic creations. Erickson found that a hypnotized subject in one instance was able to read and understand the automatic writing of another person.

2. *The production of experimental dreams under hypnosis.* Earlier workers have found that they could partially control the form and content of the dream

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by suggesting under hypnosis what was to be dreamed about. Their suggestions were restricted to a limited number of grossly sexual situations. We hoped to confirm this work and extend its scope to include a variety of dream stimuli.

3. *The nature of the relationship between hypnotist and subject.* Hypnosis fell into comparative disuse as a therapy largely because of the lack of understanding of the hypnotic relationship.

The students who participated in the project as hypnotic subjects were recruited from a Washington university by the professors, who announced to their classes that two psychiatrists were doing research with hypnosis. The volunteers were from 18 to 21 years of age. Those who seemed unstable were immediately excluded, and only those who proved to be naïve about psychology, ignorant of any knowledge of the theory of dreams, were chosen. They were asked not to read about the subject for the duration of the project. Those selected were average students, with no conspicuous personal problems and no special talents, either artistic or intellectual.

Dream Translation

Under hypnosis the subjects were directly presented with dreams, of which some were fantasies of the experimenters, some produced by other subjects during hypnosis, some were the dreams of friends and patients, and a few were myths and psychotic productions. For example, an eighteen-year-old girl was told under hypnosis: 'Dreams have meaning. Now that you are asleep you will be better able to understand them. A girl dreamt that she was packing her trunk when a big snake crawled into it. She was terrified and ran out of the room. What do you think the dream means?' Almost before the question was finished, the subject blushed, hesitated a second, then said, 'Well, I guess she was afraid of being seduced. The snake would be the man's sex organ and the trunk hers.'

As a control, subjects were always questioned about the dream before and after hypnosis, and in no instance did the subjects in the waking state make any comment comparable to that obtained under hypnosis. Care was taken not to ask leading questions nor to reveal the experimenters' interpretations of the dreams.

Several female subjects were given this dream: 'A boy was sitting at his desk studying when the waste basket caught on fire. He ran and got a pitcher of water and put the fire out.' Their immediate response was, 'Oh, he wet his bed,' or, 'He should have gone to the bathroom.' However, a dream about a girl putting out a fire made no sense to them.

It was suggested to one subject that as a child she had wet the bed and been severely scolded by her mother. In response to this stimulus she dreamed of falling into a pond in winter and being scolded by her mother.

This dream was then related to a second girl, under hypnosis, who was entirely ignorant of the genesis of the dream. Without any hesitation the second subject said, 'Oh, that girl must have wet the bed!' thus recovering the stimulus that had produced the dream.

A second example illustrating the sexual differentiation of symbols is the following dream given for translation: 'A man is sitting in a dentist's chair while the dentist tries to pull his tooth. He pulls and pulls. The dreamer is in great pain when the dream ends.' Several subjects said the dream meant that a man was having his 'vital organ' cut off. When the dental patient was a woman, the dream was translated as 'giving birth to a baby.'

An exclusive appetite for mushrooms, developed by a psychotic patient, was described to a subject under hypnosis, and she was asked what it would mean if it were a dream. She answered, 'He was very sexual. He might even be homosexual.' Since one of the authors later treated this patient, he can attest to the validity of this student's hypnotic interpretation.

During the first World War, one of the authors had the following vivid nightmare: 'I had been captured by the Kaiser and he made ready to execute me. He placed my head on a chopping block and was about to swing the axe which would end my life, when the dream ended.' Under hypnosis a student said the Kaiser was really the dreamer's father who was going to chop off his penis, not his head. She believed it was a punishment for something—probably some sexual act.

The story of Moses and the bulrushes presented as a dream to a girl subject evoked the response, 'I think somebody was going to have a baby,' adding that the bulrushes stood for pubic hair.

Because of the startling unanimity of response offered by hypnotic subjects, one might at first conclude that dreams are like puzzles which have only one answer—a sexual one. We have come to believe that these uniform sexual responses were influenced by the nature of the hypnotic relationship. Hypnosis is not only a state of consciousness, like sleep, in which dreams occur, but it is also a very striking interpersonal relationship. The most obvious characteristic of this relationship is the extreme dependence of the subjects and their feeling that the hypnotist is omnipotent. Their critical capacities, while not eliminated as Freud once thought, are certainly restricted. The hypnotist too is reacting, not only to the subject, but to the hypnotist's rôle of omnipotence. His reaction will in turn influence the subject. The relationship contains all the complexities of any relationship between two people, although the belief has developed, because of certain extraordinary aspects of the process, that in hypnosis one deals with something outside the bounds of normal human experience. The unique interaction at any given moment between the personality of the hypnotist and the personality of the subject will necessarily determine the experimental results. Even under what seem to be the same experimental conditions, different hypnotists evoke totally different responses.

Many observers have compared hypnosis to sexual seduction or assault, and it is a commonplace that a male hypnotist can hypnotize women much more easily than men. It is noteworthy that practically all the erotic dream translations cited were obtained from comparatively uninhibited women, and from one male subject who was a rather passive individual with a marked attachment for the hypnotist. Jung is said to have abandoned hypnosis when an awakening subject coyly thanked him for being so decent. 'That demonstrated to me,' he said, 'the true nature of hypnosis.' We have not found that hypnosis is very different in this respect from other transference relationships. Recognition of this factor does not detract from the method, as Jung feared, but increases its scientific validity.

The following example will illustrate how the form of the dream translation will depend on the interpersonal factors described. A shy female subject in hypnosis was told, 'Some time ago you were packing your trunk when a snake crawled into it. You became terrified and ran out of the room.' She then dreamed, 'It was night and I was lost in the jungle. It was muddy and the mud came up to my waist so that I could not move in any direction. There were little snakes on the branches of the trees above me, which kept falling on my arms and shoulders. They kept getting nearer; some of them touched me. Only the mud kept the snakes from going below my waist; they could not touch me where the mud was; they could not get in. I felt safe in the mud.' Questioned about this dream when awake, she said that the snakes were something harmful and the mud signified safety—a mere paraphrase of the dream. Hypnotized again, she was questioned by a person other than the hypnotist. Now the snakes represented something desirable, the mud a barrier to the satisfaction of her desire. First she spoke of the snakes as ideas which attracted her but which other people thought too radical; then as people whose political and social beliefs made them attractive, but who were disapproved of by others; finally, she referred to the snakes as experiences she wished to have but which convention, as represented by the mud, denied her. At this point the interlocutor left the room and the subject's hypnotist questioned her alone. There was then a general relaxation of her facial expression and quite spontaneously she said that the snakes represented a pollution which came from the phallic branches of the trees, and this was the experience she desired. Questioned by a person other than the hypnotist, her translation was on a conventional social level. The dream was perceived in sexual terms in relation to the hypnotist. Both translations are of course parts of the total dream significance.

A similar variation in translation was obtained while attempting to discover how pregnancy would be portrayed in an experimental dream. A hypnotized girl was told, 'Not long ago you discovered that a friend of yours had become pregnant; she came to you and told you how terrified she was to be caught in this way. You were shocked and did not know what to do.' She then dreamed, 'I was on an island and all around me waves were swelling; there were mountains up and down and around. There was a sudden downpour of rain. I felt that everything around me was so powerful that I was just insignificant. I did not know what to do.' Several days later the dream was recalled to her under hypnosis by a person other than the hypnotist. Although she felt the dream was about pregnancy, the small island was the social ostracism and isolation enforced by her predicament, while the rain was the gossip and insinuation which fell on her. When her own hypnotist questioned her, she said that the rain was the downpour of semen.

This difference in response raises some interesting questions. Are the sexual translations due to some direct or implied suggestive influence by the hypnotist? Although it is difficult to eliminate this factor, our impression is that neither the hypnotist nor the substitute exerted any suggestion. Or can the dominant-submissive relationship of hypnosis be a sexual experience to the subject and does this serve to determine the form of his translations? It is undoubtedly true that a number of subjects seem to regard hypnosis as a sexual experience. We believe that this specific characteristic of the relationship with the hypnotist makes for a sexual interpretation, but this cannot be stated with certainty.

Only five, or about 20 per cent of the subjects carefully studied, proved to be able translators of dreams. The explanation for the failure of the remainder of the group is not clear. It can be said, however, that these individuals were quite inhibited and rigid compared to the translators. The reasons for both the ability and inability to translate dreams will be elicited only through careful personality studies of the individual subjects.

Even among the selected group it often happened that a hypnotized subject was unable to make any statement about a dream. This type of resistance could usually be overcome by one of two opposite methods. Sometimes a subject was able to translate his own dream only when it was presented as that of another person. At other times it was necessary to transform another person's dream into his own, by suggesting that this was an actual experience which had happened to him, and then asking him to dream about it.

A pregnant woman of our acquaintance dreamt that as she lay in bed one morning she was horrified to find a number of small white worms crawling over her arm. This dream was offered to a hypnotic subject with no result. The subject was then told that she herself had recently suffered the same horrible experience. She dreamt, 'There was a white candle resting in a small dish beside my bed. The candle burned lower and lower and little wax particles kept dropping into the base of the dish.' When asked about the new dream, she said, 'The man came and that's what the dripping of the wax was.' The first dream about the worms was recalled to her and she said, 'That was the same thing.' With another subject, who was likewise unable to find any meaning in the worm dream, this same manœuvre of redreaming elicited a dream that the subject was driving alone in a car with her arm resting on the sill of the open window. It was snowing and snowflakes kept dropping on her exposed forearm. After this dream she commented, 'Now I know what the dream about the worms meant. Some girl had had relations with a man and she was afraid of getting pregnant. They hadn't taken any precautions. The worms refer to sperm.' For some reason these two subjects translated the worm dream only after they had in effect restated the dream in their own dream language.

The Production of Experimental Dreams

The production of experimental dreams under hypnosis was first successfully accomplished many years ago by Karl Schrötter. In 1912 this investigator reported a series of dreams containing the symbols with which psychoanalytic dream interpretation has made us familiar, and the work was offered as experimental proof for the freudian theory of symbols. This theory received additional confirmation in the investigations of Roffenstein in 1923 and Nachmansohn in 1925. As in sleep, the hypnotized subject will dream spontaneously, and he will also dream about situations that are suggested to him.

The production of such experimental dreams under hypnosis depends, however, upon the capacity of the individual subject to accept in fantasy and live through an emotionally-toned situation suggested to him by the hypnotist. While the situation is being outlined, his facial expressions and bodily movements show that he is experiencing genuine emotion—often painful and sometimes very intense.

The experimental procedure we finally evolved, after considerable trial and error, is as follows: Under deep hypnosis the subject is told, 'I am going to recall an experience that happened to you some time ago. You have probably forgotten it, but as I describe it, you will remember it in all its details.' The experience is then described and the subject is told: 'A dream will come to you. Raise your right hand when the dream begins and lower it when the dream is finished.' After one or two minutes of dreaming, the subject will relate his dream. It should be noted that the subject is not instructed to dream about the suggested situation, but merely told that a dream will come to him. We have been more successful in eliciting dreams with this method, probably because it permits greater freedom of fantasy on the part of the subject.

The dream stimuli we have used fall into two categories, first, those which were sexual, comprising experiences of pregnancy, intercourse, bedwetting, masturbation and homosexuality; second, nonsexual stimuli, including experiences of hostility, false accusation, competition, being taken advantage of, and others. Dreams obtained by hypnosis or by posthypnotic suggestion have all the characteristics of spontaneous dreams, and the subjects do not make a distinction between them. Following the dream stimulus, the subject usually first gives us a dream which is a paraphrase of the suggested stimulus, slightly modified by the inclusion of incidents from his own life experience. As he continues dreaming his subsequent productions have more and more the bizarre and pictorial character of dreams.

Why all subjects are not able to dream under hypnosis is not clear. The reaction to a dream stimulus seems to depend upon a combination of factors which include the nature of the dream stimulus, the personality structure of the subject, and his relationship to the hypnotist. Roffenstein had great difficulty in finding a hypnotic subject who would dream, probably because he utilized dream stimuli involving highly traumatic experiences as, for instance, suggesting to a woman that she dream about a homosexual relation. We have used a more indirect method calculated to spare the moral sensibilities of the subject. To elicit a dream about pregnancy, we suggested an experience in which a friend had become pregnant. Since the dream is always personalized, we achieved the desired result in the end. Another method of bringing about the acceptance of reprehensible experiences was to place them in childhood. From one subject we were able to elicit excellent dreams by the instruction: 'I am going to recall a certain experience. This did not actually happen to you, but as I tell you about it, you will live through it as if it had.' As a final precaution, we always attempted to remove the stimulus at the end of the experiment by telling the subject that the suggested experiences had not really happened to him.

The following experimental dream involves the play on words that is so frequently encountered in dreams. A young woman was told, 'When you were a little girl you wet your bed and when you awoke in the morning your mother scolded you.' The subject then dreamed that she told a lie which made her parents so angry that they spanked her. In her first account, she omitted the bedwetting, the substance of the lie. Only after considerable questioning by us, and evasion on her part, did she state that what she had lied about was risking being 'run over in order to go to the A and P.'

We have sometimes asked subjects to draw certain objects or figures that appear in their dreams, which frequently helps to clarify their meaning. Marcinowski first demonstrated in 1912 that landscapes in the dreams of his patients represented parts of the body, unrecognizable from the verbal descriptions. Kubie (1934) likewise reported a very instructive case, in which the meaning of a dream was revealed in a drawing representing an airplane as the male genitals.

To investigate symbolization of the female breast, a male subject was given the dream stimulus: 'One day you were walking down a street in one of the poorer sections of town and you happened to see a young woman sitting on the steps nursing an infant. Her breast was exposed and you could see the baby take the nipple in its mouth and suck at it.' His dream was: 'I came to the corner where there was an old, run-down store. I went in to look for a magazine called Famous Fantastic Mysteries. I saw some fruit—apples and oranges—and tobacco and candy. They did not have the magazine so I bought some pipe tobacco and went out. I took the Mount Pleasant street car and rode to the top of a tall hill; it was flat on top; the other side was steep. It was the end of the car line. I got off and stood on the edge and looked down.' Under hypnosis he drew a picture of the hill (Fig. 1).

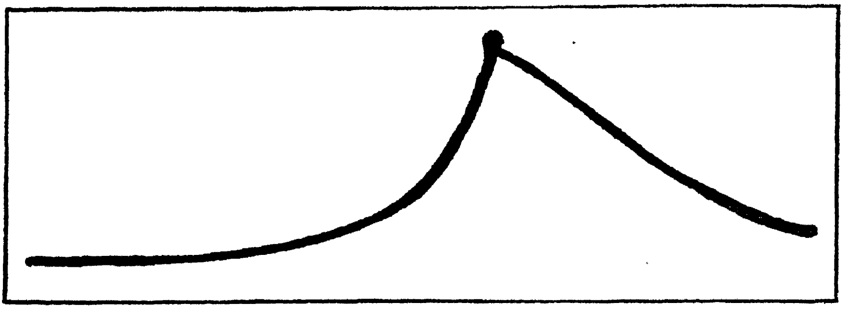

Fig. 1

The same subject was told that he had once wet his bed and had felt very much ashamed because that was the sort of thing a child did. He dreamt that he called his mother and told her about wetting the bed. The doctor came and advised an operation. He went to the hospital in a cab with his mother, was prepared for the operation, and was greatly frightened as he was taken to the operating room. Next he was walking out of the hospital and down 13th street to a hardware store in order to buy a woodworking tool. Asked under hypnosis to draw the tool, he drew the head of a hammer.

Past experiences are sometimes incorporated into the dream. A girl, given the dream stimulus of an experience in which she had been caught masturbating by her mother, dreamed: 'My sister and I, dressed in our best clothes, were making mud pies with mud which we kept in a rusty tomato can. We splattered the front of our dresses and mother scolded us, saying that it was my fault that my sister was doing it too.' She later remembered this to be an incident from her childhood, possibly a screen memory.

Another subject, told that while walking through the woods she had been frightened by seeing a snake, dreamed that she and her father climbed a steep, winding path to the top of a hill on which there was a reservoir. As they walked back she leaned on her father's arm. When awake she recalled having made such an excursion to a reservoir with her father. Shortly afterward she went home on vacation and in describing to her father her work with us, she mentioned this dream. He was startled and visibly upset but unwilling to give any explanation. The father's reaction permits the speculation that the girl's casual recollection is a screen memory for an early trauma. As an association to snake, it suggests seeing the father's penis. That experimental dreams might be used to recover forgotten experiences was proposed by Nachmansohn (1925) who made similar observations.

We gave a male subject the dream stimulus of having eaten some green apples and developing a severe diarrhœa. We suggested to him in detail the nature of his symptoms and described the number, kind, changing color and consistency of his stools. All through his subsequent narration he coughed and spluttered. This symptom had not been present before, and it disappeared after the experiment. He dreamed that he was ill in bed. The light was turned on and off several times. It got 'lighter and then darker.' He started and stopped reading several times. He turned on the radio but it kept running on and on, interrupting his thoughts. There was no music—only talk—until finally he turned it off. We believe that the cough and the manner of speaking were symptomatic equivalents of diarrhœa by displacement, similar to the verbal diarrhœa of the radio which ran on and on.

Many subjects will, when asked, produce a dream without any dream stimulus. These spontaneous dreams often have a manifest content corresponding to the chief conscious interests of the individual. A geology major, with a marked interest in architecture, dreamed repeatedly of architectural groupings and landscapes.

On several occasions we asked a woman physician to be present during hypnotic sessions. During these sessions the subject's spontaneous dreams changed in character. With a woman present, he dreamed of climbing a staircase; of a sewer pipe running through a tunnel; of driving a car around the left side of a mountain into a tunnel.

The hypnotic subject is thus found to be not simply a passive object whose dreams can be manipulated at will by an omnipotent hypnotist. Hypnotic behavior is a meaningful, goal-directed striving, its nature determined by the dynamic unconscious. The subject's spontaneous dreams are influenced by his own unconscious needs and the interaction of these with the hypnotist and any other persons included in the hypnotic situation. Similarly, the dreams elicited in response to dream stimuli are not simple reflections of the stimulus but reveal the needs and wishes of the subject.

Manifestly nonsexual dream stimuli usually evoke dreams expressing the social situation in terms of 'body language.' A young girl was given as a stimulus a situation in which, falsely accused by a friend of cheating in an examination, she became very angry but because of circumstances was unable to deny the accusation. The subject then dreamed that a dentist was trying to pull her tooth despite her frightened protests that the nurse had taken the anæsthetic out of the wrong bottle. In her dream the humiliating accusation is portrayed as bodily assault and deprivation.

A boy was told that he had a rival in his geology class with whom he had trouble competing because he refused to defer to the teacher as the other boy did. The subject then dreamed: 'The geology class went on a field trip. We came to an outcropping of rock and I started chipping at it with my hammer. A flying fragment of rock hit the other boy in the face, cutting him. That made me feel fine.' Here academic competition becomes a bodily assault on his rival. The examples indicate how a familiar dream symbol may portray a variety of human experiences. Thus, tooth-pulling may represent not only castration and childbirth but also socially insulting predicaments; the attack with the hammer may represent not only homosexual assault but also scholastic rivalry.

SUMMARY

A method is presented for the study of dreams and other unconscious processes by hypnosis. In hypnosis certain subjects have more awareness of the meaning of dream language than in the waking state. This awareness is influenced by the relationship between hypnotist and subject. The similarity of this relationship with other interpersonal relationships was pointed out, as well as the possibility of using this method for the study of transference. A number of experimental dreams, evoked by both sexual and nonsexual dream stimuli, are presented and their special characteristics discussed. The results obtained illustrate the great plasticity of the dream language and argue against too narrow interpretation of symbols.

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EXPERIMENTAL DEMONSTRATIONS OF THE PSYCHOPATHOLOGY OF EVERYDAY LIFE *

by

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INTRODUCTION

THE experiments reported below were conducted for the most part in the presence of a seminar of graduate students held in New Haven under the leadership of Dr. Sapir during the spring of 1933. In addition, a few experiments which were performed elsewhere are included.

The subject who was used for many of these demonstrations had frequently before volunteered for similar purposes. He knew nothing, however, of the plans for these experiments; they represented situations which were entirely new and problems with which he had never before been confronted.

In his approach to such demonstrations, this subject customarily reacted in a way which was fairly characteristic for many others. Ahead of time he often appeared to be resentful and anxious, or over-eager about the impression which he and the experimenter would make. Suddenly, however, with the beginning of the lecture or demonstration, he would seem to shift the responsibility completely and to lapse into an attitude of complete comfort with loss of all tension and worry.

Following one of the demonstrations described below the subject told the experimenter that his shift in mood had been even more marked than usual. The night before the lecture he had been unable to sleep and had felt more than ordinarily resentful that on so important an occasion no rehearsal or preparatory discussion had taken place. He had even developed some nausea and diarrhœa. All of this nervousness had disappeared completely, however, as he entered the lecture room on the morning of these experiments.

I. UNCONSCIOUS DETERMINANTS OF THE CASUAL CONTENT OF CONVERSATION

The subject was brought into a state of profound hypnosis, during which he was instructed that after awakening he would (*1*) notice Dr.

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D. searching vainly through his pockets for a package of cigarettes; (2) that he then would proffer his own pack, and (3) that Dr. D. absent-mindedly would forget to return the cigarettes whereupon the subject would feel very eager to recover them because he had no others. He was further told that (4) he would be too courteous to ask for the cigarettes either directly or indirectly but that (5) he would engage in a conversation that would cover any topic except cigarettes although at the time his desire for the return of the cigarettes would be on his mind constantly.

When he was awakened the subject saw that Dr. D. was looking for cigarettes. He thereupon courteously offered his own and at the same time became involved in a conversation during which Dr. D., after lighting the cigarette, absent-mindedly placed the pack in his own pocket. The subject noted this with a quick glance, felt of his own pockets in a somewhat furtive manner as if to see whether or not he had another pack, and showed by his facial expression that he had no others. He then began chatting casually, wandering from one topic to another, always mentioning in some indirect but relevant fashion the word 'smoking.' For example, he talked about a boat on the bay at New Haven, commenting on the fact that the sight of water always made him thirsty, as did smoking. He then told a story about how the dromedary got one hump and the *camel* two. When the question of travel was raised he immediately pictured the pleasure he would derive from crossing the Sahara Desert rocking back and forth comfortably on a *camel.* Next he told a tale of Syrian folklore in which again a camel played a rôle. When he was asked to tell something interesting about patients he told of taking a patient to see a marathon dance which the latter enjoyed immensely while he himself was reminded by the antics of the dancers of a circus where one would see elephants, hippopotami and *camels.* Asked what he would like to do, he commented on the pleasant weather and said that there was nothing more glorious than paddling in a canoe or floating at ease on the water, smoking.

II. Manifestations of Unconscious Ambivalent Feelings in Conversation about a Person

During hypnosis the subject was told that he admired and respected Dr. D. very much but that unconsciously he was jealous of him and that because of this jealousy there would be a cutting edge to complimentary remarks which he would make. He was further told that after awakening a conversation would be started with Dr. D. in which he would take part. The subject was then awakened and the conversation begun.

The topic of traveling and its contribution to personal education was mentioned. The subject immediately brought up the fact that Dr. D. had studied both in the Middle West and in the East and that, having traveled abroad as well, he might well be called cosmopolitan. He himself, he added, would like to travel and get a cosmopolitan education but in the last analysis that was what was being done by any old tramp who traveled from one part of the country to another by stealing rides on freight cars. There followed a discussion of human behavior as it reflected local environments during which the subject remarked that the man who had traveled showed a broader knowledge and better understanding of people and of cultural things; he added, however, that the same thing might possibly be said of any resident of east-side New York.

III. Lapsus Linguæ and Unconscious Irony

During hypnosis the subject was instructed that after he awakened Dr. D. would begin talking to him about some abstruse subject in which he was not at all interested, and that although he would actually be profoundly bored he would try to appear interested. He was told that he would want very much to close the conversation, that he would wish for some way of shutting off this interminable flow of words, that he would look around him in the hope of finding some distraction, and that he would feel that Dr. D. was terribly tiresome. He was then awakened, whereupon Dr. D. began the conversation. Although the subject appeared to be politely attentive, Dr. D. would occasionally say, 'Perhaps you're not interested?' The subject would reply with excessive emphasis, 'Oh, yes, certainly, I'm very much interested.' Now and then he would interrupt Dr. D., trying to pin him down to some definite point for discussion, but each time this effort was evaded. At length the subject began glancing about the room and was noted casually to observe an open door. Finally he interrupted Dr. D. saying, 'Excuse me, I feel an awful draft,' and got up to close the door. As he did so he was asked what he was doing. He replied, 'The air seems to be awful hot ['hot air!']; I thought I would shut off the draft.' When the hypnotist pretended not to understand and asked him what he was doing the subject replied, 'Why, I just shut the bore.' His remark was then repeated by the hypnotist for the benefit of those in the audience who had not heard it. When the subject heard his statement given as 'shutting the bore' he started visibly, seemed tremendously embarrassed, and with much urgency turned to Dr. D. saying, 'Did I say that? I didn't mean that. I just meant I closed the door.' He was very apologetic in his whole manner and bearing.

IV. Unconscious Resentment Expressing Itself in Masked Forms Through a Smoke-Screen of Overcompensatory Courtesy

The subject was told during hypnosis that he felt antagonistic, resentful and jealous of Dr. D., and that this emotional state would persist after he was awakened. He was also told that after awakening he would try to be courteous and acquiescent toward Dr. D. in every way and would appear to be willing to do anything requested of him.

After being awakened the subject seemed to be entirely at ease; he responded courteously to some casual remarks addressed to him by Dr. D. Presently Dr. D. asked him if he would mind changing his seat. The subject replied certainly not, that he would be delighted, but that *he* was quite comfortable where he was; if, however, it would make *Dr. D.* more comfortable, he would be delighted to change his seat. The request was repeated, whereupon the subject arose and asked Dr. D. to designate the precise chair in which he was to seat himself. He walked over towards the designated chair but asked Dr. D. if perhaps a certain other chair might not serve even better since the reason Dr. D. had given for his request was that he was not quite in full view of the audience. When Dr. D. insisted that the designated chair was the better one the subject, with great courtesy, still questioned, seeming nevertheless most willing to do precisely what was desired and to be hesitant only about seating himself before he was absolutely certain of Dr. D.'s wishes. After much insistence by Dr. D. that he seat himself the subject agreed that the chair indicated was precisely the one that he ought to sit in and proceeded to do so; but as he did so he moved the chair about six inches to one side and shifted its position so that it faced in a slightly different direction. Immediately upon seating himself he turned and politely asked, 'Is this the way you would like to have me?' After a few moments of casual conversation Dr. D. found fault with his position and asked him if he would mind taking his original chair. He rose promptly, said that he would be delighted to sit anywhere that Dr. D. wished but that perhaps it would be better if he sat on the table, and offered to move the designated chair to any desired spot, suggesting some clearly unsuitable positions; finally, when urged insistently to sit in the chair he again had to move it.

V. Ambivalence: Manifestations of Unconscious Conflict about Smoking in the Distortion of Simple, Daily Smoking Habits

During profound hypnosis the subject was instructed to feel that he wanted to get over the habit but that he felt it was too strong a habit to break, that he would be very reluctant to smoke and would give any thing not to smoke, but that he would find himself compelled to smoke;

and that after he was awakened he would experience all of these feelings.

After he was awakened the subject was drawn into a casual conversation with the hypnotist who, lighting one himself, offered him a cigarette. The subject waved it aside with the explanation that he had his own and that he preferred Camels, and promptly began to reach for his own pack. Instead of looking in his customary pocket however, he seemed to forget where he carried his cigarettes and searched fruitlessly through all of his other pockets with a gradually increasing concern. Finally, after having sought them repeatedly in all other pockets, he located his cigarettes in their usual place. He took them out, engaged in a brief conversation as he dallied with the pack, and then began a search for matches which he failed to find. During his search for matches he replaced the cigarettes in his pocket and began using both hands, finally locating the matches too in their usual pocket. Having done this, he now began using both hands to search for his cigarettes. He finally located them but then found that he had once more misplaced his matches. This time however he kept his cigarettes in hand while attempting to relocate the matches. He then placed a cigarette in his mouth and struck a match. As he struck it, however, he began a conversation which so engrossed him that he forgot the match and allowed it to burn his finger tips whereupon, with a grimace of pain, he tossed it in the ash tray. Immediately he took another match, but again introduced a diverting topic by asking the audience in a humorous fashion if they knew the 'Scotch' way of lighting a cigarette. As interest was shown, he carefully split the match through the middle. One half of the match he replaced in his pocket in a time-consuming manner and tried to light his cigarette with the other half. When it gave too feeble a flame he discarded it and had to search for the second half. After striking this another interesting topic of conversation developed and again he burned his fingers before he made use of it. He apologized for his failure to demonstrate the 'Scotch' light successfully and repeated the performance, this time holding the flame in such a way as to ignite only a small corner of the cigarette from which he succeeded in getting only one satisfactory puff. Then he tossed the match away and tipped the cigarette up so that he could see the lighted end. He started to explain that that was how the 'Scotch' light was obtained and noted that only one small corner of the cigarette was lit. He smiled in a semi-apologetic manner and explained that he had really given a 'Jewish' light to the cigarette, whereupon the lighted corner expired. He made a few more humorous comments, and as he talked and gesticulated appropriately he rolled the cigarette between his fingers in such a fashion that he broke it, whereupon he put it aside and took another. This time a member of the audience stepped up and proffered him a light, but as the lighted match drew near to the tip of his cigarette the subject sneezed and blew it out. He apologized again and said he thought he would light his own cigarette. While taking out his matches he commented on the vaudeville trick of rolling cigars from one corner of the mouth to the other and proceeded to demonstrate how he could roll a cigarette in that fashion, which he did fairly successfully. However, in doing so he macerated the tip of the cigarette and had to discard it. He took another, holding it in his mouth while he reached for his matches, started a conversation, and took the cigarette out so that he could talk more freely. It was observed that he took the cigarette out with his hand held in the reverse position to that which he usually used, and after completing his remarks he put the dry end of the cigarette in his mouth, exposing the wet end. He then tried to light this, held the match to the tip in the proper fashion, puffed vigorously, finally got a puff of smoke and then blew out the match. Naturally the wet end of the cigarette did not burn satisfactorily and quickly went out. He looked at it in amazement and in a semi-embarrassed manner mumbled that he had lit the wrong end of the cigarette; he then commented that now both ends of the cigarette were wet, and discarded it for another. After several similar trials he finally succeeded in lighting the cigarette. It was observed that although he took deep puffs he tended to let his cigarette burn undisturbed, and that instead of smoking it down to a reasonable butt he quickly discarded it.

A little later while smoking the subject attempted to demonstrate the violent gestures of a patient and in so doing knocked off the burning tip. Then while lighting another cigarette he became so interested in talking that he lit the cigarette in the middle rather than at the tip and had to discard it. As usual he showed profound embarrassment at seeming so awkward.

(On other occasions when the subject had demonstrated this phenomenon, he would finally complete the demonstration by selecting a cigarette in a strained and laborious fashion and then, obviously centering all of his attention upon the procedure of lighting it, would hold his hand tensely as he lit the match, applying it with noticeable rigidity to the cigarette and holding it there so long and puffing so repeatedly that all doubt was removed concerning the actual lighting of the cigarette, whereupon his whole manner and attitude would relax and he would appear to be physically comfortable.)

VI. UNCONSCIOUS CONVICTIONS OF ABSURDITIES WITH RATIONALIZATION IN SUPPORT OF THE BELIEF IN THEM

During hypnosis the subject was instructed that he was about to be reminded by the hypnotist of something he had known for a long time, that he had known it both as a result of his own experience and from reading about it in authoritative books. This, he was told, was the fact that 'all German men marry women who are two inches taller than they are.' A state of absolute emotional and intellectual belief in this was suggested and he was warned that he might be called upon to defend this statement. He was told that he had read of this in a book written by Dr. Sapir in which the reference occurred on page forty-two. He was informed that he would know this not only in the hypnotic state but also when awake. The subject was then wakened.

During the course of a casual conversation mention was made of the peculiar customs of various nations and peoples. Remarking that he was reminded of a peculiar custom among the Germans, the subject went on to describe the suggested phenomenon in a matter-of-fact way. When his statement was challenged he expressed obvious surprise that anybody should doubt it. He argued that it was entirely reasonable, that customs established originally from some simple purpose could be perpetuated by future generations until, regardless of their absurdity, they were looked upon as rational and commonplace. From this statement he proceeded to draw a social parallel to the attitude of Mussolini regarding compulsory marriage, arguing in a logical, orderly and reasonable fashion. When this failed to convince the doubters he drew upon personal experience, citing examples with a casual, simple, matter-of-fact and convincing manner, and calling upon others in the group to verify his statements. When they failed to do so and cited contrary instances he smiled agreeably and stated that every rule had its exception and that the failure of the German in the audience to confirm his observation was characteristic of the well-known tendency to overlook the obvious in familiar situations. When he was asked whether any authority in the field was known to hold such a belief he promptly stated that he had read the same observation in a book by Dr. Sapir entitled, Primitive Peoples and Customs. When he was asked where in the book it was described he smiled in a deprecating fashion and remarked that it had been so long since he had read the book that he could not be sure of the page but that, as he recalled it, it seemed to be between pages forty and forty-five—forty-four, perhaps; this despite the fact that the hypnotist had specified page forty-two. He was then asked by a member of the audience what chapter it was in; he stated that as far as he recalled it was chapter two. Asked for the chapter heading, he explained that he had read the book so long ago he really could not recall it. When a member of the audience then stated that such a belief was contrary to all common sense the subject, in amazement and with some embarrassment, asked rather urgently, 'Surely you would not dispute a man as famous and distinguished as Dr. Sapir?,' nodding his head toward Dr. Sapir. His whole manner was suggestive of intense surprise at such arrogant disbelief.

VII. AUTOMATIC WRITING: UNCONSCIOUS OBLITERATION OF VISUAL IMPRESSIONS IN ORDER TO PRESERVE AN HYPNOTICALLY ORDERED AMNESIA

During hypnosis the subject was instructed that on awakening he would engage in a casual conversation and that as he did so his hand would begin writing, but that he would have no knowledge of what he was doing.

After he had written some incomplete sentences he was asked what he was doing by others in the audience. With some amazement he explained that he had been talking to Dr. D. When he was informed that while talking to Dr. D. he had also been writing, he immediately pointed out that this could not have been since he had been holding a cigarette in his right hand. (He had actually transferred the cigarette from his left to the right hand upon completing the writing.) As the audience continued to insist he pointed out that he had had no pencil and nothing to write on, in addition to the fact that *he knew* he had not been writing and that the audience must have been mistaken. His attention was then called to a pencil and some paper on the table; he seemed surprised to see the paper and pencil and insisted that he had not had anything to do with either. He was asked to examine the paper to see if there were not some automatic writing on it, or at least writing. He picked up the paper, glanced at the top sheet, shook his head and began slowly to thumb over each sheet, examining the papers over and over again on both sides, and finally restoring the pile to its original state. He said that he found no writing on any of the sheets. His attention was called to the top sheet which he was asked to examine. He looked it over carefully at the top, turned it over and examined it, seemed to be in doubt as to whether or not he had taken the top sheet and took the second sheet; he examined that, put it away, and glanced at the third sheet; he then seemed to feel that possibly he *had* had the top sheet in his hand, so he reëxamined that very thoroughly and carefully and then, still holding it right side up, declared hesitantly, as if he hated to dispute with the audience but felt compelled to disagree, that there was no writing on the paper. One of the audience called his attention to the particular part of the paper on which there was writing. He glanced at it, looked back at his informant in a puzzled way and then reëxamined that part of the paper. After turning it over somewhat doubtfully and glancing at it he turned it right side up again. He then began holding it so that the light struck it obliquely and finally declared, still in a puzzled fashion, that there *really* was no writing on the paper. Finally he was given the suggestion by the hypnotist that there *was* writing and that he would see it. He glanced back at the paper in surprise and then an expression of amusement and amazement spread over his face as he saw the writing apparently for the first time. He commented on the juvenility of the handwriting, disowning it. When asked to tell what it said he showed much interest in reading the characters but appeared to have a certain amount of difficulty in deciphering the writing. The last word was incomplete; he read it, spelled it, and stated that it seemed to be only part of a word. When he was asked to guess what the word was he promptly reread the sentence in order to get the context, but was unable to guess. He then wanted to know why the writing had not been finished and was informed by the hypnotist that if he would just watch the pencil on the table it would suddenly lift up in the air and begin writing the rest of the word. He looked doubtfully at the hypnotist and then said, 'Why, it's lifting up,' seeming to have no realization that his own hand was picking up the pencil and holding it poised in position to write. Gradually his hand began forming letters. He was asked what the pencil was writing, to which he replied. 'Wait—wait; let's see'; he appeared to be entirely absorbed in the supposed phenomenon of a pencil writing alone. The hypnotist watched the writing, which was proceeding very slowly, and soon realized that the word in question was 'delicious.' The hypnotist then announced this to the audience while the subject was writing the last four letters and finished by the time the subject had finished writing. The subject looked up upon completing the word and said, 'It's delicious,' and then read the sentence to see if the word was relevant to the meaning. Apparently he had not heard the observer announce the word to the seminar.

VIII. 'CRYSTAL' GAZING: HALLUCINATORY VIVIDNESS OF DREAM IMAGERY EMBODYING ANGER DISPLACED FROM HYPNOTIST ON TO DREAM PERSON

In a somnambulistic state the subject was instructed that he was to gaze at the wall and that as he did this the wall would become distant, far-away, foggy and blurred, and that gradually a dark point would appear which would become more and more elaborate, that movement would enter the scene and that soon he would see a well-known and emotionally stirring moving picture.

The subject began these observations with faint interest and considerable difficulty at first but gradually a profound change in his manner and attitude occurred as he was seen to watch the moving images with intense interest. He resented any inquiries as to what he was seeing and gave the impression that he did not want to be distracted from the scene. Now and then he would turn slightly to ask, 'Did you see that? Watch.' The moving scene was from Rasputin and the Empress, showing the stumbling and falling of the Czarevitch, to which the subject showed appropriate emotional reactions. He went on to describe the sequence of events in proper chronological order. When the demonstration had gone far enough he was told that the picture was changing. He disregarded this; when the hypnotist insisted, he declared that he did not want to listen now, that the hypnotist should wait until the picture came to an end. He was obdurate about accepting any suggestions concerning the changing of the picture. The suggestion was then tried of speeding up the movie, making it go faster and faster. When this was done it was possible to shift the scene to a hospital picture which he described as one in which *a nurse shouted loudly at a patient.* Here he manifested great resentment toward the nurse for doing this, apparently hallucinating the nurse's voice. The incorporation into the hallucinatory image of his anger against the experimenter and the child-like and fear-laden exaggeration of his impression of loud and angry voices because of his own inner anger were all very evident.

IX. Implantation of a Complex

During hypnosis the subject was instructed to recall having had dinner at Dr. D.'s home on the previous day. He was then told that the hypnotist would review a certain series of actions which had occurred on the previous day, and that the hypnotist would refresh his memory of certain things that the subject had done which he regretted intensely and which constituted a source of much shame to him. Thereupon he was told to remember how during the course of the afternoon he had stood by the fireplace, leaning against the mantel while talking to Dr. D. about various subjects, when his eye happened to fall upon a package of cigarettes lying behind the clock on the end of the mantelpiece. The tale went on that Dr. D. had noticed his glance and had proceeded to tell the subject that the package of cigarettes was a sentimental keepsake of his marriage, that he and his wife had received this package of cigarettes on their wedding day and had preserved it unused ever since. As Dr. D. added various romantic elaborations the subject had not paid much attention because he was really rather bored by the sentimental story. After fingering the package, Dr. D. had replaced it at the other end of the mantelpiece; but the subject had not paid any attention to this either. Shortly after this Dr. D. and his wife had left the room for a few minutes. During their absence the subject noticed that he was out of cigarettes and glanced about the room to see if his host had some. Noticing a pack of cigarettes at the other end of the mantelpiece, he thought that his host would have no objections to his helping himself. He stepped over and took this pack of cigarettes from the mantelpiece, opened it, extracted a cigarette, lit and smoked it. Not until he had finished smoking did he realize that this was the very pack of cigarettes which Dr. D. had placed at the end of the mantelpiece instead of returning to its original hiding place behind the clock. The subject was then reminded of how distressed he had felt, of his sense of being in a quandary as to what he ought to do, of how he had hastily closed the pack and had replaced it behind the clock and had then decided that he had better put it where Dr. D. had placed it, but how before he could do this his host had returned so that he had been forced to carry on a casual conversation with this burden on his mind. Furthermore he was told that even now and after awakening this burden would still be on his mind.

The subject was roused and after a few brief remarks Dr. D. offered him a cigarette. The subject started, glanced furtively first at Dr. D. and then at the hypnotist and finally in a labored fashion reached out and accepted the cigarette, handling it in a gingerly manner. Dr. D. began an innocuous conversation, but the subject paid little attention to what was said and asked Dr. D what he thought about sentimentality, uttering the word 'sentimentality' in a tone of disgust. He then stated that he himself was not sentimental and that he tended to dislike people who were sentimental and maudlin. He stated that he hoped that Dr. D. was not sentimental, that he did not impress the subject as being sentimental. Dr. D. made another attempt to change the topic of conversation but the subject persisted with his own line of thought. He raised a hypothetical question about a man who owned an old homestead and who, as a result of the economic depression, had lost much money and was in a quandary about the necessity of selling it. He went on to talk of the burning of the house, of the house going up in smoke, and various allied topics. He then talked of guilt feelings, how everybody stole, how he himself had stolen; he wanted to know how Dr. D. would feel about anybody who had stolen unwittingly. Another attempt by Dr. D. to change the trend of the conversation failed. The subject then told of having once stolen a cigar which belonged to a man who had kept it for sentimental reasons. He said he had taken the cigar and smoked it without realizing that it was a keepsake, and that he had felt very badly about it and wondered about the possibility of replacing it so that the sentimental man would not be angry with him. In a defensive manner he then expressed a high regard for a person's feelings and contended that nevertheless people should not think too hard of others who had unwittingly violated some of their sentimental values. After this he stated that not only had he stolen the cigar but he had even stolen cigarettes (pause) a pack of cigarettes. As he said this he glanced in a particularly furtive manner at Dr. D. and also at the hypnotist, and seemed very ill at ease. He told about having smoked a cigarette and having enjoyed it, but that it had left a bad taste in his mouth afterwards and that even though he had stolen the cigarettes long ago he could not get them off his mind, that they still troubled him though common sense told him it was nothing to be concerned or worried about.

X. The Assumption of Another's Identity under Hypnotic Direction, with Striking Unconscious Mimicry and the Assumption of Unconscious Emotional Attitudes

During hypnosis the subject was informed that after awakening *he* would be Dr. D. and that Dr. D. would be Mr. Blank, and that in the rôle of Dr. D. he would talk to the pseudo Mr. Blank. Additional suggestions which the subject fully accepted were given to complete the trans-identification. After the subject was awakened a conversation was begun. The pseudo Mr. Blank questioned him about his work in the seminar, as though he were Dr. D.; the subject responded by giving an excellent talk about his experiences in the seminar and his reactions to the group, talking in the phraseology of Dr. D. and expressing the personal attitudes of Dr. D. A chance conversation with Dr. D. on the previous day had supplied him with a great deal of information which he utilized fully. It was noted also that he adopted Dr. D's mannerisms in smoking and that he introduced ideas with certain phrases characteristic of Dr. D. When the pseudo Mr. Blank challenged his identity the subject contradicted 'Mr. Blank' politely and seemed profoundly amazed at 'Mr. Blank's' remarks. Then suddenly, with an expression of dawning understanding, he turned to the hypnotist saying 'He's in a trance, isn't he?' and thereafter was only amused at 'Mr. Blank's' remarks. 'Mr. Blank' then questioned the subject about his 'wife,' to which the subject responded in a way that would have been natural for the real Dr. D. When asked about children he assumed an expression of mild embarrassment and replied, 'not yet, but you never can tell.' 'Mr. Blank' then began talking to the hypnotist in his ordinary fashion, at which the subject again seemed tremendously surprised. With a puzzled look on his face he suddenly leaned over and tested 'Mr. Blank' for catalepsy. When he found none his face was expressive of some concern; he promptly whispered to the hypnotist, 'He's coming out of the trance,' but was relieved when the hypnotist assured him that it would be all right if this happened.

Finally, when an attempt was made to rehypnotize him in order to restore his own identity, the subject displayed the emotional attitude of resistance towards the induction of hypnosis which would have been entirely characteristic of the real Dr. D. The subject seemed actually to experience the same emotional responses that Dr. D. would have had at such a time. Finally, because he appeared to be entirely resistive to simple suggestion, it was necessary to induce hypnosis by indirect methods.

This rather astonishing result offers a technique for the experimental investigation of the phenomena of identification, and of the unconscious incorporation of parental emotions by children.

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SOME CONDITIONS DETERMINING ADJUSTMENT DURING AND READJUSTMENT FOLLOWING EXPERIMENTALLY INDUCED STRESS *

by

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A NOTABLE trend among experimental psychologists is their growing interest in the composite reactions of individuals whose adaptive resources are taxed by "life-like" situations. This is particularly true with regard to the psychological and physiological changes brought about by situations which frustrate or otherwise disturb the composure of the subject. More and more attention is also being paid to the conditions and principles underlying the subject's efficient recovery from the effects of the induced disturbances.

The purpose of the present study was to determine (*a*) the extent to which cognitive structure and active participation were influential in modifying certain autonomic, verbal and motor reactions of adult subjects during a situation involving stress induced by strong electric shock, (*b*) whether any relationships could be found between the autonomic changes and the deterioration of integrated verbal-motor behaviors, and finally, (*c*) the relative effectiveness of three types of therapy in alleviating or extinguishing the autonomic reactions initiated during the period of stress.

THE EXPERIMENT

Subjects. The eighteen college men who took part in this study were unaware of the specific nature and purpose of the experiment.

The Apparatus consisted of the following three units:

An *ink-writing galvanometer,* which was adapted to record both the general level of palmar skin resistance and all minor fluctuations (GSRs) in this level.

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* See E. A. Haggard, Experimental Studies in Affective Processes: I. Some effects of cognitive structure and active participation on certain autonomic reactions during and following experimentally induced stress, THE JOURNAL OF EXPERIMENTAL PSYCHOLOGY, Vol. XXXIII, No. 4, October 1943, for a more complete description of the apparatus, procedure, results, etc., presented in this paper.

A *modified Luria-Apparatus,* which consisted of two vertical plungers into which the subject placed the first and fourth fingers of his right hand. By means of a wax-paper kymograph, a continuous record was obtained of the occurrence of the stimulus words and of the subject's verbal and motor responses.

The *electric shock* (about 400 volts with 18 microamps) was an alternating current from a transformer, and was passed through the subject's right ankle for a fraction of a second by means of one inch brass electrodes.[1]

PROCEDURE

The total experiment consisted of three sessions, each of which was approximately 35 minutes in length. These sessions followed each other within a two-hour period.

Session I. The subject was placed comfortably in the apparatus and allowed to rest for five minutes, during which time records of palmar sweating were taken. After this interval, he was instructed as follows:

> In this part of the experiment, a list of stimulus words will be read off, to each of which you are to respond by saying whatever words come into your mind. Press your index finger as you say every word. Keep on saying words and pressing your finger until I tell you to stop or until you feel the shock. It doesn't matter which words you say, so long as they are related to the one I give you. Also, it doesn't make any difference how far down you press your finger—just be careful that it is synchronized with your verbal response.

Any questions were answered, and the subject was given sufficient practice in coordinating his verbal and motor responses to become familiar with the apparatus and procedure.

Forty-two stimulus words were read off in the following order:

Trees, lake, gun, brook, *sharp, sword,* tough, sergeant, quiet, hate, tank, *sharp, sword,* soft, pleasure, brigade, farm, defense bonds, bomber, *sharp, sword,* strong, fireside, red cross, the subject's name, angry, recreation, *sharp, sword,* tender, fear, spitfire, experimenter, machine gun, fishing, mustard gas, meadow, *sharp, sword,* brave, love, and home.

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[1] The author is well aware of the strength of this shock, since he underwent the experiment before subjecting anyone else to it. A shock of this strength was employed to insure the emotional involvement of the subjects, and in this respect was successful. To illustrate the degree to which this stimulus disturbed some individuals, comments from two of the subjects are here included:

"During the afternoon, which I spent trying to read in the library, the thought of the test came back at intervals. . . . That night my sleep was broken on several occasions for no good reason, which does not usually happen."

"I felt several times that I would just have to jump out of my chair and tell you to stop before another of those shocks, but when they came, they weren't nearly as bad as I was expecting."

Because of the nature of these reactions, the situation is considered to be analogous to a minor trauma, and hence allows for some degree of generalization to disturbing life situations.

It will be noted that the *sharp, sword* sequence recurred five times during the list at irregular intervals. The subject was shocked from 10–12 seconds after the critical word *sword;* after all other words, he was told "Stop" after the 10–12 second association interval. The time between the word "Stop" (or the shock) and the following stimulus word ranged from 20–40 seconds, and varied throughout the list.

During *Session II,* each subject was given one of the three therapies described below. The purpose of this session was to alleviate or extinguish the autonomic reactions which were initiated during the conditioning or stressful session.

Session III was identical with the first session for all subjects, except that no shock was administered. The purpose of this final period was to determine the relative effectiveness of the three therapies. The autonomic changes due to the therapies was determined by noting the difference between both the general and specific reactions from the end of Session I to the beginning of Session III.

EXPERIMENTAL CONDITIONS

The Administration of the Shock (Session I)

E-shock vs. S-shock Subjects. Nine of the subjects were shocked by the experimenter (E-shock), while the remaining nine were required to voluntarily shock themselves (S-shock). Each subject in the S-shock group was instructed at the beginning of Session I that a light would appear, and that this would be a signal for him to press his fourth finger down (about an inch) until he heard a bell. He was told that by thus pressing his finger he would automatically give himself the shock. It was made clear that the shock would be felt *only* after the sequence: light-finger pressure-bell. The subjects in the E-shock group were merely told that they would be shocked occasionally during the list of words, but were given no hints as to when this would be.

In distinguishing between these two groups, it should be noted that (*a*) only the S-shock subjects were provided with a scheme of warnings which would enable them to "get set" to receive the shock, (*b*) the S-shock subjects took an active role in the administration of the shock, rather than remaining passive as did the E-shock subjects, and (*c*) all subjects were given the *same* shock (approx. 400 volts), the *same* number of times (5), the *same* number of seconds (10–12) after the *same* word (*sword*).

The Three Therapies[2] (Session II)

Rest (R) Therapy. The six subjects given this treatment were allowed to relax on a couch, look at the pictures on the wall, or even to leave the experimental room, provided they did not discuss the test with anyone. Nothing was said regarding the nature of Session III.

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[2] The term "therapy" is used here to designate *an experimental procedure.* This precaution is taken to avoid a loose, and perhaps incorrect generalization to the therapeutic procedures employed by clinicians, psychiatrists, etc.

Experimental Extinction (EE) Therapy. The six subjects in this group underwent the same procedure as Session I, except that the shock was not administered. Again, no comments were made concerning Session III.

Catharsis-Information (C–I) Therapy. The six subjects in this group were invited to make themselves comfortable by either lying on a couch or sitting in a comfortable chair, and were encouraged to express any feelings (such as fear or anger) which they had experienced during the first session. These subjects were instructed:

> Now that we are finished with that part of the test, I'd like to know what you thought of and how you felt about it. You can say anything you wish, and above all, be frank and honest. I'd like you to tell me, for example, what passed through your mind each time you were shocked, what you thought of and how you felt between the shocks, and how much the shock frightened or angered you.

Furthermore, the subjects in this group were allowed to ask any questions regarding the nature and purpose of the experiment. (An invariable question was whether they would be shocked again.) In every instance the subjects were given truthful answers. Consequently, only the subjects receiving the C–I therapy were informed (verbally) that they would not be shocked again.

Aware vs. Unaware Subjects

At the close of Session I, all subjects were asked whether they had been able to predict when the shocks would come. Nine of the eighteen were aware that it followed the critical word *sword,* two felt that it was associated with some war word, and seven were convinced that it had not come at any particular time or after any given word. For convenience in treating the data, the last two groups of subjects were combined to form the Unaware classification, making nine Aware and nine Unaware subjects. The Aware group was made up of five S-shock and four E-shock subjects, and there were five E-shock and four S-shock subjects in the Unaware group.[3]

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[3] That awareness or unawareness is determined partly by the experimental conditions and partly by the subject's attitude during the experiment is indicated by two findings: (*a*) there were more S-shock subjects in the Aware and E-shock subjects in the Unaware group, and (*b*) a correlation (r_ϕ) of .75 was found to exist between those subjects who *tried* to find out and those who *did* find out that the shock followed *sword.* (Although this correlation is based on 33 cases from subsequent studies, the experimental conditions were in all essential respects equivalent to those reported in this paper. Because of this fact, the assumption is made that a similar relationship obtained for the 18 subjects who took part in the present study.)

MEASURES

Autonomic[4]

The general level of palmar skin resistance. This measure is primarily dependent upon the gross pattern of sympathetic excitation, since the autonomic fibres innervate the sweat glands of the palmar areas. A high degree of palmar sweating is generally associated with conditions of threat or stress, in which the subject experiences such affective disturbances as fear or anxiety.

The galvanic skin response (GSR). This measure reflects a temporary increase in the general rate of palmar sweating, and is considered to be an indication of, and roughly proportional to the (conscious or unconscious) meaningfulness that a specific stimulus has for the subject. Primary attention was paid to the GSRs to the pre-critical word *sharp* and to the critical word *sword.*

"Recovery" during a non-stressful period. This measure may be said to indicate the degree to which a subject can "relax" at will, and is defined as the decrease in the rate of palmar sweating (or an increase in resistance) during a specified interval immediately following the period of stress.

Verbal

At the close of Session I, each subject was asked to estimate the number of shocks that he had received, the subjective or felt strength of the shocks, the total number of stimulus words, and to recall as many of these words as possible. In addition, the subjects were asked several questions regarding their reactions to the experimental situation.

Motor

Withdrawal. Whenever the subject pulled up on the plungers (with a pull of 200 or more grams), he was credited with a "withdrawal."

Block. If a subject said a word but did not press his finger, or vice versa, he was credited with a "block."

Tremor. This measure indicates the extent to which pronounced irregularities (e.g. as a result of trembling) occurred in the record.

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[4] These measures are considered an "index of emotion" only in the sense that the associated autonomic changes are one of the systemic mechanisms activated during emergency or stressful situations (such as the present experiment). In the evaluation of the changes in palmar skin resistance, Log. Conductance units (which are based on the logarithm of the reciprocal of the resistance) were used throughout. This transformation weights more heavily the ohmic changes which occur in the lower resistance ranges (e.g. 6,000 rather than 40,000 ohms resistance) in an attempt to obtain units which are behavorially equivalent throughout the total scale. An increment in Log. C. units represents an increase and a decrement a decrease in autonomic activity. This holds for changes in both the general level and the GSRs.

RESULTS[5]

Part I: Specific and General Reactions
Session I

E-shock vs. S-shock Subjects

1. Changes in the general level of autonomic activity. While both shock groups displayed a marked increase in palmar sweating, the change was much greater for the E-shock subjects. This difference is readily seen by the fact that the S-shock group showed an average decrease in resistance of 3,400 ohms, while the E-shock subjects showed an average drop of 8,420 ohms. In terms of Log. C. units, the relative difference between these two groups falls at the .02 level of significance.[6]

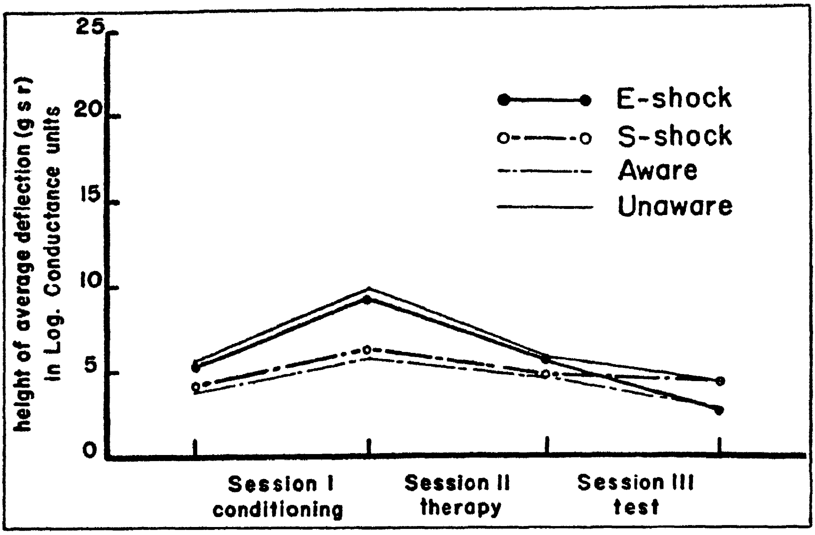

FIG. I. The relative size of the momentary changes in palmar skin conductance (GSR) for the E-shock, S-shock, Aware, and Unaware groups to the precritical word *sharp* during the three sessions.

2. Reactions (GSR) to the pre-critical word sharp. The subjects in the E-shock group showed an increased reaction to *sharp* by the end of Session I which was 2.2 times as great as that of the S-shock subjects. This difference, which is shown in Fig. I, is significant at the .03 level.

3. Reactions (GSR) to the critical word sword. It should be noted that *the GSR attributed to the word sword during Session I is actually a*

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[5] The *t*-test was used throughout this study to determine the significance of the differences between the various groups, since the critical ratio is both biased and unstable for such small samples. For the sake of simplicity, only the probability (*P*) values will be given.

[6] This value (.02) means that we would expect to find a difference this large not more than two times in a hundred *if* no "real" difference actually existed.

measure of the reactions to the electric shock. During this period, the subjects in the E-shock group not only manifest a reaction which was half again as large as that of the S-shock subjects, but also showed only about one-half the degree of adaptation to the shock as the period progressed. This difference between the reactions of the two groups (which is shown in Figure II) falls at the .04 level of significance.

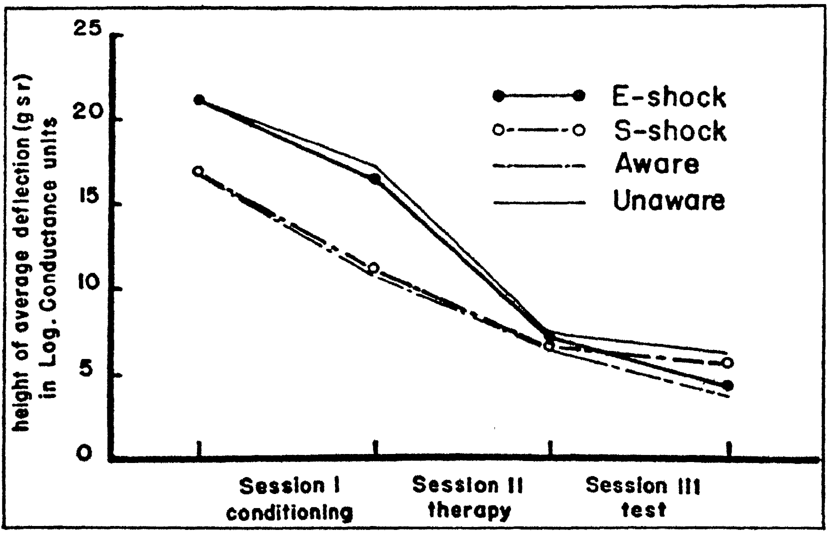

Fig. II. The relative size of the momentary changes in palmar skin conductance (GSR) for the E-shock, S-shock, Aware, and Unaware groups to the critical word *sword* during the three sessions.

The differences between the E-shock and S-shock groups with regard to both the general and specific reactions cannot be accounted for by such factors as the strength, spacing or number of shocks. Rather, it appears that the factors determining the extent to which the autonomic mechanism was activated were (*a*) whether the subject knew when the shock was coming and could "get set" for it, and (*b*) whether the subject took an active or a passive role in the administration of the shock.

Aware vs. Unaware Subjects

4. Changes in general level. There was no significant difference between the reactions of the A and U groups on this measure during Session I.

5. Reactions to sharp and sword. The Unaware group showed an increased reaction to *sharp* which was 2.6 times as great, and a reaction to the shock which was substantially larger than that of the Aware group during the conditioning session. Furthermore, the Aware subjects showed 1.9 times as much adaptation to the shock as the period progressed as did the subjects in the Unaware group. These differences are depicted in Figures I and II. Although the differences between the average scores of the A and U groups are slightly larger than those between the two shock groups, the excessive variability among the scores of the former subjects precluded the occurrence of differences which were statistically significant.

6. *Average size of the GSRs.* While the average GSR of the subjects in the E-shock group was only 1.2 times as great as the corresponding value for the S-shock subjects during Session I, the average reaction of the Unaware subjects was 2.2 times as great as that of the Aware group. This latter difference is significant at the .04 level.

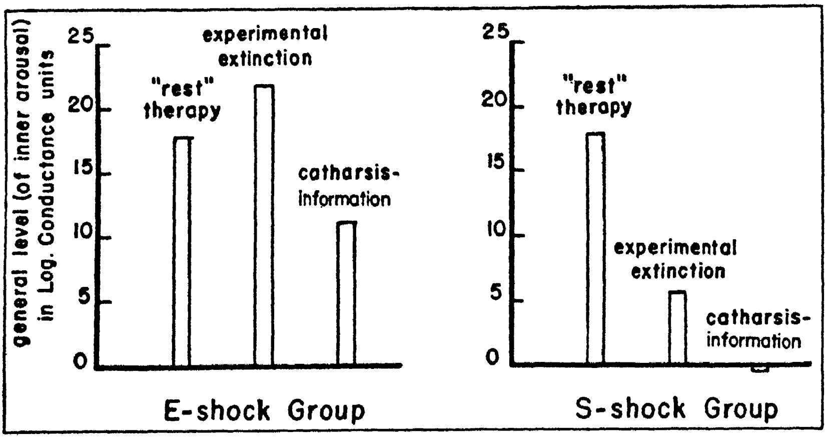

FIG. III. The relative effectiveness of the three therapies for the E-shock and S-shock groups in alleviating the general level of autonomic activity which was initiated during Session I.

Session II

E-shock vs. S-shock Subjects

7. *Changes in general level.* The increment in the general level of autonomic activity was 2.2 times as great for the E-shock subjects during the therapy session as it was for those in the S-shock group. In other words, those subjects who experienced more favorable conditions during the period of stress tended to be more amenable to the therapies of Session II.

8. *Reactions to sharp and sword.* With regard to the GSRs to both *sharp* and *sword,* the subjects in the E-shock group tended to show a greater degree of extinction than did the S-shock subjects. The differences between the two groups is significant at the .10 level for both words.

The Three Therapies

9. Changes in general level. Figure III shows the relative effectiveness of the three therapies in alleviating the increased autonomic activity which was initiated during the first session. It should be noted that there were marked differences in the extent to which the subjects in each therapy group were required to re-confront the stressful session, and in the amount of information (primarily concerning the shock) provided during this session.

From Figure III, it can readily be seen that in general, R therapy was the least effective (an av. increment of 17.6 units), EE therapy was somewhat more effective (an av. increment of 13.6 units), and C–I therapy was the most effective (an av. increment of 5.2 units) in checking the rise in autonomic activity. More precisely, the difference between the R and EE groups lies at the .45 level, the difference between the EE and C–I groups lies at the .17 level, while the difference between the R and C–I groups lies at the .03 level of significance.

Aware vs. Unaware Subjects

10. Changes in general level. Those subjects who, by the end of Session I, did not know that the shock followed the stimulus word *sword* showed an average increase in the level of autonomic activity during Session II which averaged 1.6 times as great as that of the Aware subjects. This difference must be attributed to some such factor as cognitive structure, since both E-shock and S-shock subjects composed the A and U groups.

Session III

E-shock vs. S-shock Subjects

11. Changes in general level. There was almost no difference between the two shock groups in terms of their relative change in the level of autonomic activity during Session III.

12. Reactions to sharp. In the S-shock group, there was little if any extinction of the GSR to *sharp* during this session, while a substantial decrement appeared in the reactions of the E-shock subjects. This difference in the relative rates of extinction of the two shock groups to the word *sharp* is shown in Figure I, and is significant beyond the .01 level. The fact that the S-shock subjects manifest little if any extinction of their GSRs during the non-reinforced trials illustrates the importance of the subject's active participation in the conditioning process for the establishment of stable conditioned responses.

13. Reactions to sword. Again the subjects who shocked themselves during the conditioning session and continued to make the finger response when the light appeared during the third session showed much less extinction of their GSRs to *sword*. But although the E-shock subjects manifest a drop in the size of their GSRs which was 2.7 times as great as that of the S-shock subjects (see Figure II), the difference did not prove to be statistically significant.

Aware vs. Unaware Subjects

14. Reactions to sharp and sword. The difference in the extinction rates of the subjects in the A and U groups are not nearly so marked as those between the E-shock and S-shock subjects. For example, in Figures I and II, we see that the extinction rates of the shock groups cross during this session, while those of the A and U groups follow somewhat parallel paths. This finding further indicates the importance of some form of active participation in the establishment and maintenance of stable CRs.

15. Average size of the GSRs. During this session, the average reaction of the E-shock subjects to all 42 words was only 1.01 times as large as that of the subjects in the S-shock group. Similarly, the Unaware group showed an average GSR which was only 1.2 times as great as that of the Aware subjects. Thus we see that (*a*) under the conditions of Session III, there was no significant difference between the subject groups in the average size of their GSRs, so that all subjects may be considered to be from the same "statistical population" in regard to these measures of autonomic reactivity (under non-stressful conditions), and hence (*b*) the marked difference between the A and U groups during Session I indicate an inability of the Unaware subjects to tolerate or adapt to the induced stress.

16. Specific vs. general reactions during the experiment. It may be said that there are two more or less separate aspects of an individual's readjustment following a stressful situation which must be considered: (*a*) the state of affairs usually spoken of as inner arousal, apprehension, or anxiety, and (*b*) the reactions to specific objects or events in the total situation-context. The fact that both exist and may vary independently is borne out by the present data. For example, only the S-shock—C–I therapy subgroup showed a decrement in the general level of autonomic activity between the first and third sessions (see Figure III). However, this set of subjects displayed relatively little extinction of their GSRs to the words *sharp* and *sword* during the non-reinforced trials. On the other hand, the subjects in the E-shock—R-therapy subgroup displayed a substantial increase in the degree of autonomic activity during Session II, but also showed the largest decrement in the size of their GSRs to *sharp* and *sword*. Further indications of the differential effectiveness with which the three therapies modified the general disturbances and specific reactions is found in the correlations between the measures of general level and the GSRs to *sharp* and *sword* for both Sessions II and III. These are: between level and *sharp*, — .46, between level and *sword* — .67, and between *sharp* and *sword,* .78. Thus, we see that a procedure which was most effective in alleviating the generalized disturbance tended to be relatively ineffective in extinguishing the reactions to the specific aspects of the situation, and vice versa.

Part II: Some Reaction Patterns Which Appeared During Session I

A. Differences Between the Reactions of the Various Groups

Autonomic

17. E-shock vs. S-shock Subjects. It has been pointed out in the previous sections that the E-shock subjects showed a greater increment in the general level of autonomic activity, were more disturbed by the initial shocks, showed less adaptation to this stimulus as the period progressed, and developed a greater degree of conditioned (yet "unconscious") anticipation of the shock than did the subjects in the S-shock group.

18. Aware vs. Unaware Subjects. Similarly, the Unaware subjects were more disturbed by the shock at the beginning of Session I, showed less adaptation to the shock during the period, showed a greater degree of ("unconscious") anticipation of the shock, and tended to manifest larger reactions to all the stimulus words than did the Aware subjects.

Verbal

19. E-shock vs. S-shock Subjects. At the close of Session I when the subjects were asked to estimate the number of stimulus words, the E-shock subjects estimated an average of 33 words, while the average for the subjects in the S-shock group was 44 words. (There were, it will be recalled, 42 words in the list.) The difference between the two groups is significant at the .10 level.

20. Aware vs. Unaware Subjects. As would be expected, the subjects in the Unaware group estimated fewer words at the close of Session I than did those in the Aware group. While the Aware subjects estimated an average of 46 words (or judged the session to be "46 words long"), the average estimate of the Unaware subjects was only 31 words. The difference between these two groups lies at the .03 level of significance. In accordance with the tendency of the more disturbed subjects (as indicated by the autonomic and motor records) to under-estimate varying aspects of the disturbing situation, the Unaware subjects also recalled fewer words and tended to judge the shock as being weaker than did the subjects in the Aware group.

Motor

21. E-shock vs. S-shock Subjects. No discrepancies appeared between the E-shock and S-shock groups with respect to such indices of disorganized behavior as the number of withdrawals, blocks, or the amount of finger tremor.

22. *Aware vs. Unaware Subjects.* On the various indices of disorganized motor and verbal-motor behavior (e.g. withdrawals, blocks, tremor), the Unaware subjects manifest an index of disturbance which was 2.4 times as great as that of the Aware subjects.

B. Some Correlations Among the Various Measures

Autonomic

23. *Degree of general disturbance.* Those subjects who were characterized by the greatest degree of autonomic activity at the end of Session I:

a.	showed a more variable level of autonomic activity	r: .51
b.	tended to react with larger GSRs	r: .55
c.	showed less adaptation to the shock	r: .62
d.	recalled fewer words at the close of Session I	r: .53

24. *Size of the GSRs.* Those subjects who tended to show larger GSRs during Session I:

a.	showed more variable GSRs	r. .87
b.	showed a greater degree of general autonomic activity	r: .55

Verbal

25. *Recollection of the stimulus words.* Those subjects who recalled most words at the close of Session I:

a.	estimated more words	r: .51
b.	estimated more shocks	r: .26
c.	judged the shocks as being stronger	r: .62
d.	showed a lower level of general autonomic activity	r: .53
e.	showed a greater ability to "relax" under non-stressful, resting conditions	r: .71

Discussion

The importance of the subject's attitude during the experimental situation and his knowledge of its purpose has been demonstrated in numerous instances. In the present investigation, marked differences appeared in the extent to which the subjects knew, for example, when to expect the shock during Session I, or whether they would be shocked again during the final period. From the analysis of the data, it appears that the major factors determining the development of cognitive structure, or "a clear mental picture," during the conditioning session are (*a*) whether the subject voluntarily administered the shock himself or remained passive and was shocked by the experimenter and (*b*) whether the subject actively faced the stressful situation by trying to determine when the shock would come or assumed a passive attitude.

The differences between the various reactions of the Aware and Unaware subjects clearly demonstrate the importance of differences in cognitive structure, since both of these groups received comparable experimental treatments. The several differences which did occur seem to point to the general inability of the Unaware subjects to adequately tolerate the stress imposed during Session I. In the first place, the subjects in the Unaware group showed a significantly larger reaction (GSR) to all words in the list than did the Aware subjects during the initial session. No such difference occurred during the final or non-stressful session, in which no shock was administered. Again, the Unaware subjects were characterized by marked tendencies toward disruptive behavior, as evidenced by a distorted evaluation of the length of the stressful session and a general disintegration of the coordinated verbal-motor responses. These findings (which cannot be attributed to any systematic differences in the experimental treatments given these subjects) thus seem to substantiate the position that the failure of the Unaware subjects to develop a reasonable degree of awareness under the conditions of stress was one of several indices of excessive disturbance, or an inability to tolerate the imposed stress.

It was furthermore pointed out (in footnote 3) that the subjects in the Unaware group tended to assume a passive attitude during the stressful period. But to find that a group of subjects is characterized by patterns of excessive disturbance and a passive attitude during the stressful situation does not inform us as to whether a causal relationship exists between these behavior patterns. That is, it cannot be determined from the present data whether the passivity of the Unaware subjects was a defense mechanism which served as a buffer to protect these subjects from experiencing an excessive degree of excitation, or whether the various indices of disturbance manifest by the Unaware subjects resulted from their tendency to remain passive in the face of such stressful situations. It is also quite possible that these two factors interact. But in any case, the assumption is untenable that the mere lack of information concerning when the feared stimulus would come, and the assumption of a passive attitude rather than actively confronting such unpleasant situations will insure freedom or protection from the effects of the disturbing stimulus. On the contrary, it was found that those subjects who knew most about the conditions involved in the experiment and who actively faced this experience showed significantly fewer signs of autonomic, verbal, and motor disturbance during the stressful situation.

As was true in the case of the Aware and Unaware groups, striking differences also appeared between the reactions of the E-shock and S-shock subjects during Session I. That is, the E-shock subjects showed a significantly greater increment in the degree of generalized disturbance, were more disturbed by the shock, adapted less to this stimulus as the session progressed, and showed a greater degree of conditioned anticipation of the shock than did the S-shock subjects. In view of the similar patterns of autonomic reactivity shown by the two sets of subjects, it is worth noting again that the common characteristic of one set of subjects (S-shock, Aware) is that they assumed an active attitude or role during the conditioning session, while the other subjects (E-shock, Unaware) tended to remain passive in one manner or another.

One of the most suggestive differences which appeared between the shock groups is the fact that the average reaction of the E-shock subjects to *sharp* was, by the end of Session I, significantly larger than the corresponding reaction of the S-shock subjects.[7] This difference cannot be attributed to any "conscious" association between *sharp* and the shock, since five of the E-shock subjects were not even aware that the shock followed the word *sword.* Rather, the pattern of reactions displayed by these subjects appears to be an instance of conditioning in which the organism responded appropriately, even though the subjects did not "consciously" recognize that the word *sharp* was associated with the shock. In other words, while the E-shock subjects were certainly aware that the shock was the source of their fear or anxiety, they were not aware of its specific association with the word *sharp.* Thus, the fact that these subjects knew of no "logical reason" for showing signs of disturbance whenever they heard the pre-critical word did not prevent the occurrence of the autonomic reaction.

Another point deserves mention in connection with the subjects' psychological and physiological reactions to the words *sharp* and *sword.* At the close of Session I, all subjects were asked whether they had experienced any emotional disturbances in response to the stimulus words. Several subjects in the Aware group mentioned that they had felt mild apprehension whenever they heard or thought of the words *sharp* and *sword,* but the subjects in the Unaware group, on the other hand, spoke of a generalized feeling of anxiety, which was diffusely associated with all of the words in the list. This reaction pattern of the Unaware subjects corresponds to their tendency to show excessive GSRs in an indiscriminate manner to all of the stimulus words in the list.

With regard to the correlations among the various measures of verbal and autonomic reactions during Session I, certain interesting relationships emerge. In the first place, those subjects who showed the greatest degree of general autonomic activity at the end of the conditioning session were able to recall fewer of the stimulus words to which they had given chained associations. This tendency, if found to recur in the data from subsequent experiments, will add confirmatory evidence for the Freudian tenet that "repression" is a sequel of anxiety. But whether or not this tendency is an instance of Freudian repression or is a matter of the disorganization of the perceptual processes or of the memory traces, it appears that not one but several aspects of the situation were lost from immediate recall. This is seen in the fact that the subjects who recalled fewer words also recalled fewer shocks, estimated a smaller number of stimulus words, and tended to minimize the subjective or felt strength of the shocks. Finally, there was a moderately strong relationship between those subjects who recalled a larger number of words and those who were more able to "relax" under non-stressful conditions. Thus we see that in general the subjects who showed a better adjustment during the stressful situation, as indicated by fewer instances of functional disorganization on measures of autonomic, verbal, and motor reactions, and a greater tendency to maintain integrated behavior patterns during the conditioning session also adapted most readily to a non-stressful situation.

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[7] Although a similar difference appeared between the reactions of the A and U groups, the variability among the scores of these subjects resulted in a statistic which was not significant.

During Session II, certain differences appeared between the three therapies in the extent to which they served to alleviate the autonomic reactions induced during the conditioning session. When the effects due to the conditions of shock and awareness are allowed for, the effectiveness of the three therapies seems to be generally proportional to (*a*) the extent to which the subjects were required to re-confront the stressful situation (behaviorally as in Experimental Extinction or ideationally as in Catharsis-Information), and (*b*) the amount of information given the subjects regarding such matters as whether they would receive additional shocks during the final session (implicitly as in Experimental Extinction or explicitly as in Catharsis-Information). The therapy in which these two factors were most operative (Catharsis-Information) was found to be significantly more effective in modifying the general level of disturbance than was the therapy (Rest) in which they were least present, if at all, while Experimental Extinction therapy fell into an intermediate position.[8]

The fact that re-confronting a previously disturbing situation was one of the factors determining the therapies' effectiveness may seem to suggest the desirability of the "kill or cure method of re-living traumatic experiences." But in this connection, it will be seen (in Figure III) that during the second session, those individuals given Experimental Extinction therapy who did not know when to expect the shock (E-shock) manifest an increment in the general level of autonomic activity which was 3.8 times as great as that of the subjects who knew that if they were shocked at all, it would follow the light-finger pressure-bell sequence (S-shock). In fact, the subjects in the E-shock group showed a greater increment on this measure than if they had received no treatment at all, or Rest therapy. This finding suggests then, that it either may or may not be advisable to "re-live traumatic experiences," depending on whether the individual is aware of (and hence in a position to cope with) those aspects of the situation which were previously disturbing.

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[8] The marked superiority of Catharsis-Information therapy raises the question of whether it was the "catharsis" or the "information" which played the major role in making this procedure the most effective of the three. The answer to this question cannot be determined at this time, however, since the effects of both factors are confounded in the present data.

Finally, in considering the relative effectiveness of the therapies used in the present study, the fact should not be overlooked that the procedures which were most effective in alleviating the general level of autonomic activity tended to be relatively ineffective in extinguishing the individual's reactions to the specific aspects of the situation (e.g. *sharp* and *sword*), and vice versa. Thus, it appears that for the most effective treatment of such near-traumatic experiences attention must be paid both to the individual's reactions to specific objects or events in the total situation and to his more generalized disturbance. These two aspects of readjustment may, consequently, require separate methods of treatment.

THE EFFECT OF FEAR UPON ESTIMATES OF THE MALICIOUSNESS OF OTHER PERSONALITIES *

by

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The present paper describes an attempt to demonstrate in quantitative terms the generally recognized fact that the emotional state of a subject may affect his judgments of other personalities. It is one of several experiments now in progress in this laboratory which have been designed to expose some of the internal—physical and psychical—factors which influence a subject's perceptions, interpretations, and appraisals of the objects and situations in the world about him.

The diagnosis of traits of character from the face depends, it is often said in common language, upon (1) the observation of the features (physical signs) and (2) the interpretation of them on the basis of associations—associations which in the past have been found by the observer to exist between somewhat similar physical signs and particular types of behavior. Psychologically, we speak here of two processes which may for convenience be differentiated, namely, perception and apperception. Such is the nomenclature, at least, which we have provisionally adopted for the purposes of this discussion. The term *perception* is confined to the *conscious* recognition of configurated sense impressions or segregated sensory wholes; whereas *apperception* is used to designate the process—whatever its antecedents—whereby meaning, in other than sensory terms, is assigned to the physical stimulus. This use of the term apperception is at least within the definition given by Stout. For, according to this authority, it is by the process of apperception that "a presentation acquires a certain significance for thought by connecting itself with some mental preformation as this has been organized in the course of previous experience." The term is used to include understanding, interpreting, classifying, subsuming, and so forth.

The distinction we make between perception and apperception is, of course, somewhat arbitrary. For, under most conditions, the two processes

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are inseparably fused. For instance, as Köhler has so succinctly remarked: "If in a friendly-looking face we try to separate the mere bodily configuration and the friendliness, we find the task rather difficult, as long as we look at the whole face and do not analyze the face itself as a mosaic of colored spots."

Now, the understanding of other personalities from their features is usually more successful than can be accounted for on the basis of what was consciously perceived. And so, since in such cases the visual apparatus is the only path of communication, there must be some retinal stimulation which is not translated into conscious perception, but which, nevertheless—through some other effects—determines apperception. These other effects are not far to seek when we bear in mind that the external world comes to a subject, not solely in the guise—to use Whitehead's terminology —of *presentational immediacy* (pure sensory experience) but also in the guise of *causal efficacy*. That is to say, physical changes are activated in the body of the subject which are of the sort that may be cognized as feelings, emotions, and kinaesthetic sensations. Such activations are without doubt most fundamental, preceding in ontogenetic development the clear *conscious* perception of the stimulating object. Certain faces, for instance, arouse approach movements and others arouse withdrawal movements in the child long before the capacity for an accurate representation of the perceived object exists. Since experience shows that such movements may be modified by slight changes in the stimulating object, there must be at this time an accurate physical differentiation of sensory impressions. But since no report may be given of them, we must admit that perception—if we wish to use the term—is unconscious. Now, when language is acquired, it is probable that the estimates of other persons which a child expresses verbally are unwittingly made on the basis of how the body responds to their presence. If the child smiles, for instance, the person confronting it is "nice and good," but if it averts the head the person is "bad."

It may also be that unconscious imitation of the expression and gestures of others—a process so common in children—arouses feelings and emotions somewhat comparable to those occurring in the perceived object, and that this too is a factor which aids understanding. In this connection we are reminded of the young lad described by Poe in *The Purloined Letter* who used to mimic the facial expression of his opponent in a gambling game to discover whether it made *himself* feel intelligent. By this means he estimated the mental calibre of the other boy and in accordance with the verdict directed his own moves in the game.

The point is that certain physical features of the object which the subject does not consciously perceive are nevertheless physically affecting his body, and though he may be unable to report upon these internal happenings, they are nevertheless affecting his conscious appraisal of the object.

This is not the place to discuss in detail all the processes which contribute to a knowledge of our fellows. We merely wish to suggest how it may come about that apperceptions of the personality (feelings, motives, and probable behavior) of others are commonly influenced—as experience seems to teach—by the total bodily state of the perceiving subject. Our hypothesis would be, then, that certain meanings, or categories we might call them, such as "friendly" and "unfriendly," become integrated with certain muscular sets and emotions, and when the latter are aroused the former will be mobilized and come to mind. These intermediary physical processes would seem on superficial glance to be entirely irrelevant to the task at hand, but when we consider that they are conspicuously present—at least in an imaginatively representative form—in persons, such as novelists, whose insight into character is generally regarded as most acute, we have cause for reflection.

Now, when such processes can be accounted for by reference to the presented stimulus and its similarity to past stimuli, and hence to *traces* (a fictional concept) in the mind of the subject, we should consider them —at least for that subject—legitimate, normal, and objectively valid. If they happen to be inappropriate and unadaptive, well, it is a matter of ignorance, insufficient experience, and so forth. When, however, the internal processes which are determining apperception have recently been aroused by some other essentially dissimilar and irrelevant stimulus, or may be shown to be more or less inveterate in the subject, then we must refer to another process—a process which distorts the external world or adds something to it which is not there.

According to the terminology of some psychologists the process whereby psychic elements—needs, feelings and emotions, or images and contexts of images activated by such affective states—are referred by the experiencing subject to the external world without sufficient objective evidence is called *projection.* When this process is active, what is in truth mental and within the personality comes to appear as if it were outside the personality. We may speak of *perceptive projection* when sensory elements are projected, i.e., when an image takes on the vividness, substantiality, and out-thereness of a real object—as in a dream and in an hallucination—or when an image transforms or makes additions to the actual physical features of an inadequately perceived real object so that the latter is taken for the object of which the image is a representation—as in an illusion. And we may speak of *apperceptive projection* when non-sensory elements are projected. This occurs (1) when imaginal contexts, or the categories under which the activated images are subsumed, are believed, with insufficient objective evidence, to be descriptive of or to pertain to objects in the environment—as in delusions; or (2) when the needs, feelings, and emotions themselves, rather than the images or imaginal meanings activated by them, are believed by the subject to be existent in other personalities—also as in delusions. The former might be termed *complementary apperceptive projection* and the latter *supplementary apperceptive projection.*

An example of perceptive projection would be the case of a girl who mistook a stranger in the crowd for a friend whom she was hoping to meet, or the case of a criminal who believed that he saw a detective with whom he was acquainted following him down the street. An example of complementary apperceptive projection would be the case of a guilt-ridden young man who believed that his elders were secretly condemning him; whereas an example of supplementary apperceptive projection would be the case of an unhappily married woman who believed that most of her married friends were unhappy.

The reader may have noticed that in defining projection we spoke rather nonchalantly of images; we said that hallucinations were projected images and so forth. How can they be projected images, when for the experiencing subject there are no images; there are only external objects? The answer is that they are projected *unconscious* images—a purely fictional concept. In dreams and in hallucinations we know that they are not external objects which the subject perceives; nor is he conscious of imagery in the usual sense. Common experience, however, bears witness to the inseparable gradations between dreams and phantasies—the latter being admittedly composed of images—as well as to the similarity between memory images and some of the objects which appear in dreams; and consequently some psychologists have been led to speak of projected unconscious images, since *qua* images the subject is unaware of them. It will be remembered, furthermore, that Prince performed experiments upon an hallucinating dissociated subject, and by means of automatic writing demonstrated to his own satisfaction that the hallucinated objects were similar to the imagery of a contemporary unconscious (or co-conscious) mental process.

Despite such considerations and such experiments, the hypothesis of unconscious psychical events is still refuted by other psychologists—principally on logical grounds. This is not the time to debate the point. We ourselves must simply admit that we feel the need of this concept to describe in detail the phenomenon of projection. For, as far as we know, only elements which are not at the moment conscious may be projected. It is supposed that if the subject could adopt the introspective attitude some of these so-called unconscious images would become conscious, but because attention is forcefully and passionately centered upon the external world, or because the subject is in sleep or in some other state hardly to be defined—abstraction or dissociation—images attain the apparent substantiality of external reality; they appear to be "out there." An illusion exemplifies the same process but to a lesser degree. In this case there is some real object, but what the subject perceives is a composition product of the real object and the unconscious mental image. The greater the ingress of the latter the more does the event resemble an hallucination.

What a subject might say when presented with a vaguely perceived and unrecognizable object is this: "It makes me think of so and so," or: "It arouses images of so and so." That would be conscious imagery and not projection. If the subject "guesses," "supposes," or "imagines" it is "so and so," we speak of a pseudo-projection. For, strictly speaking, the term projection should be used only when the subject is convinced of the true existence outside himself of the object or process in question. A projection is morbid only when it is the result of some obsessive idea or continuously dominant need which frequently operates to transform the real world in a particular way.

Projections, then, by distorting a subject's recognition and interpretation of external reality prevent a detached and disinterested objectivity. They may, neverthless, serve the cause of truth. For instance, a young man who has suffered undeservedly through the treacherous and malicious behavior of others—he has a fixed feeling of inferiority, let us say—may thenceforth suppose that strangers and acquaintances whom he meets are prompted solely by selfish motives, and at least towards him are critical and scornful. He may, indeed, like Timon of Athens, generalize his particular experiences and become a misanthrope. In so far as such a man overemphasizes the selfishness of human beings to the exclusion of their other more engaging traits he is the victim of a complementary apperceptive projection. We might say that he is mistaken in his proportions, since he attributes so much evil and so little good to others. But we must not lose sight of the fact that in some respects he may be a better observer than the average citizen, since as a result of his particular sensitiveness to malice he may very well discover and precisely analyze subtle and hidden forms of it which others have neglected, and so make a valuable contribution to psychological knowledge.

We have discussed the probable influence of bodily changes upon apperception, and how, when the former are relatively unconnected with the immediate stimulus, misapperceptions or delusions may occur. These we agreed to call apperceptive projections. Finally, we proposed the hypothesis of unconscious images to explain both perceptive projections and complementary apperceptive projections.

Such were the speculations which led us to the present enterprise: an attempt to prove by experiment that a functional relationship between emotional and apperceptive processes exists normally, and, by changing the former, a qualitative or quantitative alteration of the latter will occur. More specifically, we might characterize this experiment as an attempt to produce measurable variations in the apperception of benevolence or malice in other people by the excitation of fear in the apperceiving subject, the variation or exceptionality of the apperception in each case being estimated by comparing it with the subject's habitual apperception of the same object.

The particular form of our hypothesis and the technique devised to test it were based upon such a common phenomenon as that of a person who in a fear-invoking situation—for instance, while walking through a "tough" neighborhood at night—apperceives some of the strangers whom he encounters as "dangerous characters." It was supposed that, if, for purposes of standardization, photographs of people, rather than living personalities, were used as material to be judged, the subjects—especially children—after a fear-invoking situation would estimate the faces in the photographs to be more malicious than they would estimate them to be when they were free from fear. Such at least was our hypothesis, and when the daughter of the author planned a week-end country house-party of five girls, eleven years of age, it seemed that this might provide an opportunity to test it. It was supposed that during this party there would be many chances for control tests after relatively normal pleasure-invoking circumstances, and, since the children wanted to play the game of *murder* in the evening, it seemed that a fear-invoking situation would occur in the natural course of events.

We judged that the game of *murder* alone would not be sufficiently exciting, so we planned to tell the first half of a ghost story after the end of the game, on the supposition that the combination of the two situations would give rise to a state of anxiety which would perseverate long enough to affect the results on a test given immediately afterwards. At the last minute, however, circumstances interfered with the telling of the ghost story, and so we were forced to depend upon the efficacy of two games of *murder* for the evocation of fear.

TECHNIQUE

Thirty photographs approximately 5.5 × 7.5 cm. in size—most of which were taken from the magazine *Time*—were mounted upon white cards and divided into two roughly comparable series; each of which was composed of eleven photographs of men and four photographs of women, all of them unknown to the subjects of the experiments. The first series of fifteen faces was called Test A, the second series was called Test B.

Tests were given on three occasions as follows:

First Occasion. Test A after pleasure-invoking situation (control). This experiment was performed at 12:30 P.M., Saturday, after the children had returned from motoring about the country.

Second Occasion. Test A and Test B after fear-invoking situation. This experiment was perfomed at 7:30 P.M., Saturday, after the children had played two games of *murder*. The thirty photographs were arranged in one series so that the even numbers belonged to Test A and the odd numbers to Test B.

Third Occasion. Test B after pleasure-invoking situation (control). This experiment was performed at 12:30 P.M., Sunday, after the children had returned from hitching behind a sleigh. In this way each test (A and B) was performed twice—after a fear-invoking situation and after a pleasure-invoking situation (control). We shall speak of the two trials of Test A together as Experiment A, and the two trials of Test B together as Experiment B.

On all three occasions each of the subjects—five girls, eleven years of age (designated as Mary, Jane, Lou, Jill, and Nan)—was seated at the same place, separate from the others, in a well-lighted room. The experiments were conducted as group tests, the photographs being passed around from subject to subject in order.

For the first experiment instructions were as follows:

> I shall show you a series of fifteen photographs of persons whom you do not know. Some are nice, some are bad, and some are just average. I want you to guess from the photographs how good or how bad they are.

At this point each S was given a sheet of paper on which were ruled fifteen lines divided into three columns. The instructions were continued as follows:

> On the sheet of paper which I have given you there are three columns. In the first column each line is numbered from one to fifteen. These stand for the numbers of the photographs. When you are presented with a photograph—each photograph is numbered from one to fifteen—please look at the face and immediately decide how good or how bad is the character of the person. It has been found that you are more likely to be right if you are guided by your first impression than if you try to reason it out. The mark or rating for goodness or badness which you give the person should be placed in the second column opposite the number of the photograph. The scale for marking runs from one to nine as follows: 1 = extremely good, i.e., generous, kind, loving and tender; 2 = very good; 3 = good; 4 = fairly good; 5 = average; 6 = fairly bad; 7 = bad; 8 = very bad; 9 = extremely bad, i.e., cruel, malicious, and wicked. Remember now: 5 is average, 9 is extremely bad and 1 is extremely good.
>
> In the third column there is space for you to write down what you think the person in the photograph is thinking or saying. You should spend about thirty seconds on each photograph, but I shall allow you more time if necessary.

After these directions were read and explained, two sample photographs not belonging to the series—one of a man smiling and one of a man scowling—were shown to the children and they were asked to announce their ratings so that all could hear. This, so that the experimenter could be certain that the directions were understood.

On the second occasion, that is, after the fear-invoking situation, the instructions did not have to be repeated. It was pointed out, however, that there were now thirty instead of fifteen faces to be diagnosed.

For those who are not acquainted with the game of *murder* it may be said that it is played after dark throughout a house with all lights extinguished. The players commence by drawing lots from a hat; one of the players, unknown to the others, drawing the lot of murderer. After the draw, the players, with the exception of the one amongst them who has drawn the lot of detective, sneak about the house in the dark until the murderer "kills"—by touching—any one of the players whom he chooses. The victim, after counting ten, yells aloud, and then all the players join the detective, who proceeds by cross-questionings to discover the culprit. Everyone must tell the truth except the murderer, and he may lie as much as he likes.

Among children there are individual differences in sentiment towards this game. Some children love it and play it without disquietude; others wish to play but experience an unpleasant apprehension throughout; still others are afraid to play and avoid it if possible.

Results

At the cross-examination after the "murder" one of the subjects, Mary, said that she was "frightened to death" and again: "I was so scared I hid under the table the whole time." Lou also admitted that she was afraid. No other remarks of a like nature were volunteered, and it was our general impression that the amount of occasioned excitement was less than usual.

That the two games of *murder,* however, were effective in arousing some degree of fear was attested not only by the results of the experiments, but also by an event which occurred in the early morning of the next day—that is, on Sunday. This event bears reporting since it helps to confirm the validity of the tests. It happened in this way. Jane, who had been sleeping in one of the spare rooms with Lou, woke the household at six-thirty in the morning to inform us that for more than an hour two burglars had been prowling about her room. She was in tears and shaking with fright while she explained that it was not a dream but a fact. She had seen the two men clearly with her eyes open; they had taken things from the closet and from the bureaus and had escaped finally by way of the window. She had heard the dogs chase them down the lane, and if we came to the window, she assured us, we would see their tracks in the snow. A careful examination of the premises, however, proved that no one had been about and that nothing had been stolen. Evidently Jane had had a vision, a hypnapompic vision—because, as she explained, it was real and nothing like a dream—due to a perceptive projection. Never before had she had such a vision, so it is probable that the *murder* game was the exciting agent which aroused the imagery. This was more of an effect than we had anticipated. Jane insisted despite the protestations of her companions that the event had really occurred; in fact, it seemed very important to her—as if, let us say, her sanity depended upon it—that she should be believed. None of her friends, however, gave credence to her story during the day. It was not until nightfall that Mary and Lou—but not Jill and Nan—were inclined to believe her. Belief for Mary and Lou seemed to depend upon the uneasiness aroused by darkness. The outcome of the matter was that Jane, Mary, and Lou announced that they would not sleep in the ill-fated room "for anything" and, even when given another room, they insisted that we should look for burglars in the closet and under the bed, draw the shades down to the sill, speak in a low voice so that the burglars—supposedly sneaking about the house—should not hear, put a night-light in the room and visit them at intervals throughout the night to make sure that everything was all right. Jill and Nan, however, consented to occupy the spare room where the burglars had been seen and without any ado dropped off to sleep. This difference in attitude between Mary, Jane, and Lou, on the one hand, and Jill and Nan, on the other, should be borne in mind when the test results are examined.

Now let us turn our attention to the experiments. To discover whether fear affected the subjects' judgments of personality we should compare the results obtained after *murder* in each of the two tests (A and B) with those obtained after normal conditions. In making this comparison we should bear in mind that, according to the adopted method of scoring, an increase in the rating of a photograph signified an increase in the apparent badness (maliciousness) of a face, and a decrease in the rating signified an increase in the apparent goodness (benevolence) of a face.

The results were as follows: In Test A, as compared with the scores obtained after ordinary conditions, the average ratings after the fear-invoking situation remained the same in 1 photograph, were lower (indicating more "goodness") in 2 photographs, and were higher (indicating more "badness") in 12 photographs. In Test B, as compared with the results obtained after ordinary conditions, the average ratings after the fear-invoking event remained the same in 2 photographs, were lower (indicating more "goodness') in 3 photographs, and were higher (indicating more "badness") in 10 photographs. The slightly less significant results in Test B, as compared with Test A, might be explained by supposing that Jane's recital of her burglar vision aroused in her friends (by suggestion) subjective states which were somewhat similar to those which followed *murder,* and so nullified to some extent the significance as a control of the Sunday test trial. If the results of the two experiments (A and B) are taken together, it appears that out of a total of 30 photographs 22 (73%) were scored higher—that is, the character of the faces in these photographs were judged to be more malicious—after the fear-invoking event than after normal pleasure-invoking events; or, to state it otherwise, it appears that out of 27 photographs, the average ratings of which were different under the two conditions, 22 (81%) were scored higher after fear.

TABLE 1

	EXPERIMENT A			EXPERIMENT B			BOTH EXPERIMENTS
	Average rating per photograph		Difference in rating	Average rating per photograph		Difference in rating	Difference in rating
S's	Control	After fear		After fear	Control		
			b − *a*			*d* − *e*	$\frac{c+f}{2}$
	a	*b*	*c*	*d*	*e*	*f*	*g*
Mary	4.53	5.73	+ 1.20	6.47	5.40	+ 1.07	+ 1.15
Jane	6.53	7.47	+ 0.94	7.80	7.00	+ 0.80	+ 0.87
Lou	5.67	6.07	+ 0.40	6.07	5.13	+ 0.94	+ 0.67
Jill	5.60	5.93	+ 0.33	5.33	5.53	− 0.20	+ 0.06
Nan	6.33	6.13	− 0.20	6.67	7.27	− 0.60	− 0.40
Average	5.73	6.26	+ 0.53	6.47	6.07	+ 0.40	+ 0.47

The results might have been more striking if the experimenter had not made the mistake of including several photographs of persons whose faces were so distinctly forbidding that some subjects assigned to them the maximum mark of 9 on the control test, thereby making a further increase of rating after fear impossible. Out of a total of 150 [15 (photographs) x 5 (subjects) x 2 (tests)] ratings assigned after ordinary conditions, there were 19 ratings of 9 which did not change when conditions changed. Of the 131 remaining ratings, 96 (73%) were different after the fear-invoking situation; and of the 96 ratings which were different, 67 (70%) were higher (indicating more badness).

An examination of the tabulated results reveals the fact that for the five subjects there was an average change per photograph of + 0.53 in Experiment A, and of + 0.40 in Experiment B; the average of the two tests being + 0.465, or approximately one-half a point towards badness per photograph. In other words, after the fear-invoking situation one-half the faces were judged, on an average, to be one point less good (more wicked) than they were judged after ordinary conditions. There are, of course, other methods of scoring the subjects, but, since intercorrelations between the results obtained by a variety of methods indicated that the present system of scoring was the best, the other methods have not been included in this report.

These results seem to show that complementary apperceptive projection did occur in the subjects, or, to state the matter more specifically, that fear tended to increase the apparent maliciousness of other personalities.

Examining Table 1 from the point of view of individual differences it may be observed that of the five subjects, one (Nan) in Experiment A and two (Nan and Jill) in Experiment B had lower scores after the fear-invoking event; whereas four subjects in Experiment A and three in Experiment B had higher scores after this event. If the two experiments are taken together it appears that one subject (Jill) showed relatively little change in her ratings, whereas the four other subjects did change. Of the four who did change, three, or 75% of them (Mary, Jane, and Lou) judged faces as more malicious after *murder* than after ordinary conditions.

As a part of the test the children had been asked to write down what they thought the person in each photograph was saying or thinking. We guessed that fear might make the supposed thoughts more frightening and melodramatic, but there were few differences between the thoughts written under ordinary conditions and those written under exceptional conditions. What changes did occur, however, were for the most part in the positive direction. For instance, in Jane's paper after ordinary conditions a woman said: "What shall I do next?" and after *murder* she said: "So all your children are sick. Well I hope they die"; and after ordinary conditions a man said: "I'll do it if I like," and after *murder* he said: "You brute, you fool, you hypocrite!"; and after ordinary conditions a man said: "Yeah, I understand" and after *murder* he said: "So you *got* them, did you?"

Though the results from this part of the test were inconclusive as far as the verification of our hypothesis was concerned, they did give evidence of both complementary and supplementary projection. They afforded hints, indeed, of how the wind was blowing in each subject's mind. Jane, for instance, who hallucinated burglars on Sunday morning, wrote on Saturday the following thoughts for four of her subjects:

> "You give me back that money or I'll shoot."
> "Gosh. I've gone broke."
> "How did you make out? Did you get any money?"
> "Have you got the money?"

Since Jane was the only child who made any mention of money or burglars, her written sayings might almost have been taken as prognostically significant. On Sunday, after the hallucination, she wrote the following thoughts for three of her subjects:

> "I went in to a room last night in Topsfield" (it was in Topsfield that these events occurred).
>
> "I got the scare of my life last night" (supplementary apperceptive projection).
>
> "Well, well, have any more ghosts come to you?" (this suggests that at this time she was doubting the substantiality of her visionary experience).

THEORETICAL CONSIDERATIONS

To explain the positive results obtained in these experiments it seems that we should take account of at least three processes: (1) the activation of fear by the game of *murder;* (2) the perseveration of this emotion; and (3) the projection of integrated elements into the material to be diagnosed.

All of these processes must have occurred, it seems, in the three subjects who gave consistently positive results (Mary, Jane, and Lou). The two who gave negative results (Jill and Nan) may not have been aroused to anxiety by the game; or, if they were so activated, the emotion may have dissipated itself before the test was given; or, finally, they may have been experiencing some anxiety during the test but the emotion did not affect their judgments of personality.

That the positive results depended to a large extent upon the evocation of fear is suggested by the fact that the only subjects (Mary and Lou) who spoke of being afraid during the *murder* game were both in the positive group. The third member of the positive group (Jane) happened to be the "victim" in the first game of *murder* and the "murderer" in the second, circumstances which militate against the admission of fear even if the subject is experiencing it.

We must suppose that perseveration and projection were both present to account for Jane's vision of burglars ten hours later. That Mary and Lou were the subjects who gave credence—but only after nightfall—to the substantiality of Jane's vision is a fact which fits in with the other positive responses given by these two children. It demonstrates, moreover, the determining effect of emotion and of projection in the genesis of belief.

It is difficult to give a satisfactory account of the psychological processes revealed by our findings without reference to a theory of motivation. But since the theory which we believe best describes the functional aspect of human nature has not yet found its way into the literature, and hence cannot be referred to by name, and since space does not allow for an outline of it at this time, we shall omit mention of the particular need (instinct) or combination of reflexes aroused in our subjects. In lieu of this, we shall refer all the bodily affections which occurred in our subjects to the emotion of fear, since its existence in children after playing *murder* is easy to establish by means of subjective reports as well as by the observation of its usual objective correlates.

In accordance with our introductory speculations and hypotheses we should attempt to explain the results of this investigation by saying that the bodily processes operative in the subjective experience known as fear were aroused by the game of *murder;* that these in turn mobilized the integrated images and categories (the more general imaginal meanings). We have in mind such categories as "dangerous situations," "criminals and burglars," "malicious characters," and so forth. Then, when the test was presented to the children, the photographs which fulfilled the requirements of sufficient similitude functioned as foci for the projection of these images and categories, a photograph, for instance, being assimilated to the category "very bad" instead of to the category "bad" in which it seemed to fit best when the subject was without emotion.

It was as if the subjects, experiencing an emotion without adequate stimulus, sought something in the external world to justify it—as if the idea had come to mind: "there must be malicious people about." The result of this was that the photographs appeared to change in the direction of adequacy as stimuli. It is clear that we have here a typical complementary apperceptive projection.

Two other processes which usually accompany a state of emotional excitement may have occurred in this experiment—preferential perception and perceptive projection.

By *preferential perception* we refer to the unconscious (unintentional) process by which attention is directed to objects in the environment similar to the traces (or images) integrated with the aroused emotion. The subject simply becomes aware of the external object, the preceding process of selection being unconscious. In the present experiment, it is not unlikely that the children's attention was attracted to special facial parts —parts which indicated "badness"—and that judgments were made on the basis of these.

Perceptive projection has already been defined. It may also have been operating in this test. The children, for instance, may have perceived the faces as physically different from what they actually were. In other words, mild illusions may have occurred.

These phenomena can be best explained, though we do not insist upon it, by the hypothesis of activated traces or unconscious images. The traces which are integrated with the bodily processes which make up the emotional state are there, as it were, below consciousness—ready to appear as conscious imagery or to modify events which are conscious, namely, perception and apperception.

That the supposition of active unconscious imagery is not an unwarranted hypothesis is indicated by the frequency with which imagery such as has been described occurs on the fringe of consciousness in the form of a phantasy which can be recalled immediately afterwards. Such imagery is *almost* unconscious in that it may never be in the focus of attention and may be recalled only in part and with difficulty afterwards. The following is an instance of this familiar phenomenon.

One evening a subject was sitting alone in a somewhat isolated farmhouse reading *The Turn of the Screw,* the gruesome story by Henry James (fear-invoking situation). At an exciting point of the narrative the telephone bell rang and a strange man, who said he was a reporter, asked permission to motor over that very evening for the purpose of discussing a matter in which the subject was interested. Though it was already ten o'clock and the reporter was calling from a town twelve miles distant, the subject agreed to see him and returned to his reading. After a few moments he realized that his attention had been divided. Although he could give an account to himself of what he had been reading, he was also aware that an unintentionally initiated phantasy had been developing in the marginal realm of consciousness. In the phantasy an automobile had drawn up to the door and the supposed reporter entered the house. After a few introductory words the latter had drawn a revolver and a skirmish had followed in which the two men had rolled about the floor until by a clever twist of the wrist the revolver was disengaged from the gangster's hand and the subject became master of the situation. This phantasy represented the functional signification assigned to the strange voice on the telephone and the event which was to come. The subject was decidedly of the opinion that this would not have occurred if at the time he had been reading a story of a different kind.

The explanation of this event would be that fear had evoked imagery of "dangerous characters" to which the voice of the stranger had been assimilated; and with these compounded elements the mind swayed by apprehension had constructed a melodramatic reverie in the form of a tentative hypothesis, one might say, of what the future would disclose. This whole phantasy might easily have been unconscious. One might say that it was only by chance that the subject captured it out of the twilight zone of his consciousness (cf. a man capturing, losing, then recapturing the content of a dream as he wakes).

Now, if the subject had been less self-conscious and later had manifested a lowered threshold for the sound of an automobile coming down the drive (preferential perception), and when greeting the reporter had circumscribed his attention to the less kindly aspects of his face (preferential perception) or had unconsciously distorted the features of the stranger so that physically he appeared to be different (perceptive projection) or, though seeing him without distortion, had interpreted his looks and gestures as signifying "bad intention" (apperceptive projection) —if these psychological events had occurred we should have explained them by referring to a mental process (activated in this case by the fear-invoking story) of which the phantasy was a component. If this phantasy had been unconscious—as it might well have been—we should have been forced to resort to the concept of unconscious psychic processes.

If the circumstances of the evening telephone call, however, had been sufficient, as a result of the subject's past experience under similar circumstances, to call forth the fear and the resultant phantasy, we should have spoken of the redintegration of danger images and categories without projection—the term projection being confined to the operation of irrelevant affections which in the present instance were aroused by the reading of the book. So much for the projection of unconscious images and meanings.

Now, from the standpoint of an interest in the individual differences of personality, we should like to know whether the two groups distinguished by this test—namely, the susceptible class (Mary, Jane, and Lou) with an average change per photograph of + .90 points, and the non-susceptible class (Jill and Nan) with an average change per photograph of — .17 points—are characterized by personality differences which are more or less permanent. In other words, would these two groups show approximately the same difference in their responses to other comparable tests or to the same test at a later time or to somewhat similar circumstances in everyday life? We cannot, of course, give a positive answer to this question, but the following facts suggest that the tests did reveal some more or less consistent personality traits:

1. The coefficient of correlation (product-moment method) between Experiment A and Experiment B was + .84.

2. The hostess of the week-end party who knew the children intimately, when the nature of the experiment was explained to her, guessed that Mary and Jane would score the highest. This prophecy was correct.

3. Jane's hypnapompic vision was a manifestation of the same process which was responsible for her high score on the test. Jane had never before experienced such a vision, but in the past few months had had several nightmares in which burglars figured prominently.

4. Mary and Lou came to believe in the truth of Jane's story about the burglars, but Jill and Nan did not.

Thus the behavior of the children during the week-end, the estimations of their temperaments by the hostess, and the results on both tests showed a considerable degree of correlation.

There is no generally accepted concept of type or trait to describe the response of the positive group as differentiated from the negative group. Psychologists have written of emotionality and of subjectivity, but, since these words have been used without precision, it is impossible to say whether our group of projectors should be subsumed under one or both of these headings. By definition there is no projection without affection or emotion, but there is no evidence to show that projection invariably parallels intensity of emotion. Other factors—such as conglomeration and the partial dissociation of the personality itself—seem to be important. *Conglomeration* is a name given to the psychical condition—as found in children—in which little or no differentiation is made between images and objects, between what is internal and psychical and what is external and substantial.

SUMMARY

Five girls, eleven years of age, estimated from photographs the degree of goodness (benevolence) or badness (maliciousness) of other personalities. These estimates were made under two different conditions: (*a*) after ordinary pleasurable activity in the sunshine, and (*b*) after two games of *murder* in the dark. A comparison of the ratings assigned under these two conditions revealed the following:

1. Seventy-three per cent of the faces were estimated by a majority of the group as more malicious when judged after the fear-invoking situation than when judged after ordinary conditions.
2. Of the four subjects whose ratings differed under the two conditions, three (75%) estimated the series of faces as more malicious after the fear-invoking situation than after ordinary conditions.

These results may be attributed to complementary apperceptive projection subsequent to the activation of an emotional state. The conclusion which may be drawn from this experiment is that under some conditions the emotion of fear will cause some experiencing subjects to increase their estimates of the maliciousness of other personalities.

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EXPERIMENTAL STUDIES OF PROJECTION: I. ATTRIBUTION OF TRAITS *

by

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PROJECTION has been defined by Healy, Bronner, and Bowers as "a defensive process under sway of the pleasure principle whereby the Ego thrusts forth on the external world unconscious wishes and ideas which, if allowed to penetrate into consciousness, would be painful to the Ego." Withdrawn from its metapsychological setting, the dynamic mental process thus described may be translated into these terms: A wish, attitude, or habit-hierarchy which is not compatible with other attitudes or habits of an individual may be *attributed* by that individual to other persons rather than to himself providing he lacks insight into the fact that he himself possesses the trait in question. This process of attributing is unconscious; i.e., the subject does not give any verbal evidence that he knows his perception is false.

The widespread use of projection as an explanatory principle in both normal and abnormal behavior (e.g., in the psychoanalytic theories of paranoia and phobic anxiety) warrants some attempt to evaluate the concept critically with a view to determining its exact nature and the conditions under which it operates. The present investigation has attempted to isolate a specific situation involving projection and to analyse the process quantitatively and in terms of other variables co-operative.

Although projection occurs most frequently and with greatest energy in the neuroses and psychoses it is found to some degree in many normal persons. According to the description given by Freud, Jelgersma, Van der Hoop, and others, it is to be expected that within any group of normal individuals a certain number will utilize this process for avoiding the feelings of self-accusation which would normally accompany the possession of habits and attitudes which meet with disapproval either from society or from the individual's own standards of conduct. Just what kinds of habits or "traits" are most apt to suffer projection has not been made clear; Alexander has been quoted as using dishonesty as an example and

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Freud and Ferenczi, among others, have described the projection of homosexual desires. The hypothesis may be advanced that any *persistently motivated* habit or attitude may be projected if it is sufficiently *reprehensible* to be refused recognition by its possessor.

The habits and attitudes subsumed under the trait names of *stinginess, obstinacy,* and *disorderliness* should have these two characteristics since they form the triad of traits which, according to psychoanalytic theory, are intimately connected with an incompletely extinguished anal-erotism. As such they should be, first, persistently active even though recognition of their existence may be wanting, and second, reprehensible or opprobrious. No experimental validation of the first assumption was made, but the offensiveness of the three traits was checked on a verbal level by the following device.

A group of 36 men from one of the writer's classes rated 31 obnoxious non-sexual character traits on a seven-point scale, place 1 being labelled "neutral" and place 7 "very offensive." Stinginess obtained an average rating of 4.50 (10th in rank); obstinacy averaged 4.03 (12th in rank); disorderliness averaged 4.28 (11th in rank). Bashfulness, used as a control trait in the projection experiment, averaged 1.97 (23d in rank). The instructions were as follows:

> Below are listed a number of character traits, or general reaction patterns, which characterize to a greater or less degree the behavior of many people. Some are offensive and some are about neutral, i.e., they neither irritate us nor are we glad to perceive them. After each trait are 7 spaces. The first space indicates neutrality and the seventh indicates extreme offensiveness. The intervening spaces indicate various degrees between these two extremes. Place a cross in the appropriate space after each trait to indicate how neutral or offensive that trait is to you when you see it in other people.

METHOD

In order to test for the operation of projection as here redefined, the measurement of three variables was required:[1] first, the degree to which each individual demonstrated a given trait, i.e., a "true" measure of his stinginess or other trait; second, the amount of that trait he attributed to his associates; and third, the presence or absence of insight with respect to his possession of the trait.

Subjects. The cooperation of three fraternities was secured through members who were registered in the writer's classes. House A had 37 members, all of whom had lived together at least seven months; House B had 38 but as in the case of House C, which had 22 members, the experiment was carried out in the fall and some of the members had lived in the house only two months.

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[1] No attempt was made in the present study to investigate the nature of projection in terms of consciousness or unconsciousness.

Rating Scales. Four seven-point graphic rating scales, one each for *stinginess, obstinacy, disorderliness* and *bashfulness,* were distributed two at a time at two house-meetings a week apart. The *bashfulness* scale was not used with House A but was included for the other two houses as a check on the assumption that a trait need be highly repellent in order to be projected; as noted above, bashfulness was rated by a separate group as much less obnoxious than the other three traits. For each fraternity the names of the members were placed on one mimeographed sheet in alphabetical order and the subjects were instructed to rate each person in turn, including the rater himself, from the top down. Each name was followed by 7 equal squares labelled at the top of the sheet, from left to right, as follows:

Stinginess: 1. generous, perhaps an easy mark; 2. rather easy-going; 3. sensible about use of possessions; 4. cautious but not a tight-wad; 5. fairly careful of his rights as an owner; 6. pretty tight about most things; 7. very stingy. *Obstinacy:* 1. easy to persuade, suggestible; 2. agreeable to others' plans; 3. often willing; 4. a trifle hesitant; 5. usually has a "better" plan; 6. anxious to have own way; 7. very obstinate. *Disorderliness:* 1. painfully neat, perfect order; 2. finicky about details; 3. fairly tidy; 4. about average; 5. careless; 6. pretty messy, untidy; 7. no attempt at order. *Bashfulness:* 1. always conspicuous, good mixer; 2. very self-possessed; 3. meets people easily; 4. slightly reserved, not timid; 5. dislikes meeting strangers; 6. self-conscious, timid; 7. painfully bashful.

On the first occasion detailed instructions concerning the best methods of rating were given, with proper cautions against "skewed distribution" and "halo effect." The concept of *units of conduct* as opposed to that of *character trait* was discussed and the subjects were urged to base their judgments on specific incidents as much as possible. No special instructions were given for the other ratings. To test the hypothesis that a trait must be considered reprehensible in order that projection might occur, the rating scale for the 31 character traits was presented to the members of Houses B and C with these instructions:

Here are a number of character traits. Pay special attention to those that we have used for ratings in this experiment. You will see that the column on the left, number 1, is labelled "neutral," and number 7, on the right, is labelled "very offensive." Check the column for each trait which will most accurately describe how offensive it would be to you to be considered as possessing that trait. In other words, tell how much you would dislike being called "ambitious," "affectionate," etc. If you would rather *like* to be considered as having some of the traits just leave all spaces following those particular traits blank. Do this very carefully and try to be strictly honest about it. Be especially careful about those we have used in this experiment. Be sure to put your name on the back of the paper.

Experimental Conditions. Each man took his scales to his own room and made the ratings by himself. The writer collected the finished products downstairs and, in the case of House A, asked each man to write on the back of one of his sheets the names of the five men he liked best in the house and the five he liked least. Perhaps one of the best indications that the judgments were made honestly was the fact that, although assurance had been given that all ratings would be absolutely confidential, nearly half the men asked for reassurance when the papers were handed to the writer.

Measures of the three essential variables were secured from the obtained data as follows: *first,* the degree to which each individual demonstrated a given trait was determined by averaging the combined ratings assigned to him on that trait by the other members of his house; *second,* the amount of a given trait attributed to others was obtained by averaging the ratings a given individual assigned to the other members of his living group on that trait; and *third,* the factor of insight was measured only in terms of presence or absence. A subject was said to possess insight if he rated himself in the same half of the distribution as others rated him, and to lack insight if he rated himself in the other half. Thus, a subject placed above the average for the group by his associates' ratings on him was said to possess insight if he rated himself above the average he assigned to the group in his own ratings; he lacked insight, however, if he placed himself below the average rating he assigned to the group. Likewise, a subject placed below average by his associates possessed insight if he placed himself below the average rating he gave others, but lacked insight if he placed himself above the average he gave others. This is, of course, a very rough gradation but in view of the coarseness and probable lack of reliability of the self-ratings it was deemed useless to use any finer measure.

Scores for the first (combined ratings) and second (average rating attributed to others) variables were converted to standard scores in order that the three houses might be combined on each trait into one large group. The subjects were then divided into four subgroups as follows: A—those above average in a trait but without insight; B—those above average, with insight; C—those below average but without insight; D—those below average, with insight.

RESULTS

1. *Reliability of Measuring Instruments.* The half-and-half reliabilities as corrected by the Spearman-Brown formula are given in Table 1 for the first and second variables. No measurement was possible of the reliability of the third variable (insight). The average of the reliability coefficients for the combined ratings was +.89 and for the average rating attributed to others +.65.

2. *Projection and the Lack of Insight.* If projection were operating in every subject, without relation to insight, a high positive correlation would

TABLE 1

Half-and-Half Reliabilities, as Corrected by the Spearman-Brown Formula, of the Measures of the First and Second Variables in Houses A, B, and C

TRAIT	FIRST VARIABLE A	FIRST VARIABLE B	FIRST VARIABLE C	SECOND VARIABLE A	SECOND VARIABLE B	SECOND VARIABLE C
Stinginess	.85	.81	.88	.49	.91	.72
Obstinacy	.93	.86	.87	.67	.52	.75
Disorderliness	.96	.96	.81	.50	.70	.72
Bashfulness		.95	.94		.72	.50

be expected between "true" stinginess, obstinacy, disorderliness, or bashfulness (first variable), and the mean size of the attributed ratings on the respective traits (second variable). Such calculations were made for all four traits and the obtained coefficients are given in Table 2. They are of negligible size for two traits and negative to a moderate degree on the other two. But these correlations do not serve as a valid test for the operation of the process since the factor of insight is not considered.

TABLE 2

Coefficients of Correlation between the First and Second Variables on All Four Traits in the Group as a Whole and in the Insightful and Non-Insightful Subgroups Taken Separately

	GROUP					
	Whole		Insightful		Non-insightful	
TRAIT	N	*r*	N	*r*	N	*r*
Stinginess	97	− .03	65	− .08	32	+ .09
Obstinacy	97	+ .01	63	− .15	34	+ .34
Disorderliness	97	− .35	66	− .46	31	+ .13
Bashfulness	60	− .32	39	− .34	21	− .22
Average		− .17		− .26		+ .08

The critical comparison for the projection hypothesis lies between the means of the attributed ratings of Group A (e.g., stingier than average but without insight) and Group B (stingier than average but with insight). According to the hypothesis the non-insightful group should attribute a greater degree of stinginess to others than should the insightful group. In Table 3 are given the mean ratings assigned to others by each of the four groups on all four character traits. In each case the mean attributed rating is greater for A than for B. In Table 4 are shown the differences, their probable errors, and the critical ratios of the differences.

A similar relationship holds true between Groups C and D; those who were more generous than average but were without insight attributed greater generosity to others, on the average, than did those who were more generous than the average but recognized the fact. This relationship likewise holds true for all four traits. The sizes of the differences

TABLE 3

MEAN RATINGS ASSIGNED TO OTHERS (SECOND VARIABLE) ON ALL FOUR TRAITS BY EACH OF THE FOUR GROUPS DESCRIBED IN THE TEXT

Values given are Standard Scores. The mean ratings in distastefulness assigned by the group as a whole to each of the traits are also given; these values are raw scores from a seven-point scale.

		GROUP							
	DEGREE OF DISTASTEFULNESS		A		B		C		D
TRAIT		*n*	M	*n*	M	*n*	M	*n*	M
Stinginess	5.34±.16	20	+.23±.14	22	+.02±.12	12	−.29±.17	43	−.01±.09
Obstinacy	4.33±.19	22	+.37±.13	21	−.29±.15	12	−.49±.24	42	+.06±.11
Disorderliness	5.00±.17	11	+.16±.22	30	−.55±.12	20	−.01±.12	36	+.42±.07
Bashfulness	3.68±.20	7	−.20±.19	20	−.41±.13	14	+.06±.13	19	+.41±.17

TABLE 4

DIFFERENCES AND RELIABILITIES OF DIFFERENCES OF MEAN ATTRIBUTED RATINGS (SECOND VARIABLE) BETWEEN GROUPS A AND B AND BETWEEN GROUPS C AND D

	A—B		D—C	
TRAIT	DIFF.	DIFF. / P.E.	DIFF.	DIFF. / P.E.
Stinginess	.21 ± .18	1.1	.28 ± .19	1.4
Obstinacy	.66 ± .20	3.3	.55 ± .26	2.1
Disorderliness	.71 ± .25	2.8	.43 ± .14	3.1
Bashfulness	.21 ± .28	.7	.35 ± .21	1.7

between A and B and between C and D are not large but in all cases are in the same direction.

It would perhaps be more desirable to state this relationship in the form of a partial correlation coefficient, the correlation being between the first and second variables with the third (insight) partialed out. This is not possible with the present data, however, since the measure of insight depends on the relation between the self-rating and the first variable.

If the total group is split into two subgroups on the basis of presence or absence of insight, however, a statement can be made in correlational terms of the relation between the first and second variables. In Table 2 are shown these values for all four traits. The relationship is consistently negative in the insightful group and positive in the three largest non-insightful groups. These signs are, of course, consistent with the directions of difference between the four groups as described above.

In summary, these results satisfy the expectations of what should occur in this experimental situation if the projection mechanism were operating. To put it briefly with stinginess as an example: those who were more stingy than average but had no insight rated other people higher in stinginess, on the average, than did those who were equally stingy but recognized their own characteristics in that respect. The same may be said for those who fell on the generosity side of the distribution. Thus the non-insightful groups gave more extreme ratings than did the insightful groups. They were more biased in their judgments and this bias was in the same direction from the mean as they were themselves with respect to their possession of a given trait.

Without belaboring the question of whether the lack of insight was a result of repression in the Freudian sense, or whether it was a conscious or unconscious process, it can be said that the *effects* of projection have appeared in this situation in a way that was predictable from the present redefinition of that process.

3. *Characteristics of Projected Traits.* The hypothesis was presented above that those habits or attitudes which were persistently motivated and were considered reprehensible by the subjects would be most susceptible to projection. No technique was available for measuring the persistence of the motivation behind the habit-patterns studied; this characteristic must remain, for the present, hypothetical. Some measure was obtained, however, of the distastefulness of or the reprehensibility attached to each trait by each subject in Houses B and C. In Table 3 are given the means of the combined "offensiveness-ratings" of all subjects on each of the four traits. The traits maintained the same relative positions with regard to distastefulness as were found in the independent group of 36 men referred to above. The absolute values were slightly higher for the first three traits and markedly higher for bashfulness, a result perhaps of difference in

instructions in the two instances. This obtained rating invalidated the use of bashfulness as a non-reprehensible control.

In order to compare the obnoxiousness attached to the traits by those who possessed them to more than average extent but had no insight (Group A) with that attached to them by those who possessed them to equal extent but had insight (B), the average of the ratings assigned to all four traits by both groups was determined. For Group A it was 4.97 ± .24 and for Group B 4.39 ± .17. The difference is .58 ± .29, the critical ratio being 2.0. Similar comparisons for Groups C and D show the former to have a mean of 4.53 ± .23 and the latter 4.88 ± .14; the difference is .35 ± .27 with a critical ratio of 1.3.

These differences are small and exceedingly unreliable, although the direction of difference, at least between A and B, is that to be expected from the hypothesis as presented. Those subjects who were without insight into their possession of the traits demonstrated a greater distaste for the idea of being accused of possessing them than did those subjects who had insight. The difference between C and D is difficult of interpretation without similar ratings on generosity and the other antonyms of the trait-names used.

In spite of the direction of difference between A and B the hypothesis that a trait must be considered reprehensible in order to be projected cannot be sustained on other grounds. The low ratings on stinginess may be considered as high ratings on generosity. Each reprehensible trait has a socially acceptable opposite which is simply a trait-name, attached to the opposite end of the distribution, and the process of projection occurred, apparently with equal strength, at both ends of the distribution, i.e., with both the reprehensible traits and their socially acceptable opposites (Table 4). That subjects who had reprehensible traits without insight (Group A) rated those traits as more distasteful than did subjects who had insight (B) is not evidence that reprehensibility from the subject's standpoint is an essential characteristic of a projectable trait. This relationship suggests, only, the concurrent operation of other dynamic processes as yet uninvestigated.

4. *The Tendency of a Subject to Lack Insight on More than One Trait.* In Table 5 is shown for each fraternity the number of subjects who lacked insight, i.e., who belonged either to the A or to the C groups, on varying numbers of traits. In House A only 4 subjects lacked insight on all three traits, 8 lacked insight on two, 13 on one, and 12 had insight for all three traits. Since the size of the insightful and non-insightful groups varied unsystematically with each trait in each house, no theoretical distribution-by-chance can be given for comparison, but the table shows no marked grouping of subjects at the four-traits end of the distribution. It may safely be concluded that the tendency to lack insight is largely specific to any

TABLE 5

Number of Subjects in Each Fraternity Who Lacked Insight on Various Numbers of Traits from All to None

FRATERNITY	NUMBER OF TRAITS ON WHICH INSIGHT WAS LACKING				
	4	3	2	1	0
A		4	8	13	12
B	0	3	7	17	11
C	0	4	3	8	3

given trait and is not a general personality trait which shows its influence in judgments made on all traits.

Discussion

The consistently negative correlations found in the insightful groups between amount of trait possessed and amount attributed to others suggests the presence of a dynamic process which operates in the opposite direction from projection. For example, a stingy subject does not, as in projection, attribute stinginess to others; quite on the contrary, he attributes generosity. Others' personalities are perceived in contrast to the individual's own. This process occurs in the presence of insight rather than its absence, as is the case with projection, and in order conveniently to differentiate it from projection it is suggested that it be called *contrast-formation*.

The conclusions as itemized below are based on averages and correlations which necessarily fail to consider the individual case. The low reliabilities of nearly all differences indicate the presence of not infrequent individual exceptions to the general tendencies exhibited by the group as a whole. How much these low reliabilities are dependent on lack of reliability of the measuring instruments (unsystematic factors) and how much on systematically operating mental processes which have not been measured it is impossible to say. "Insight" and "reprehensibility," considered as influencing factors, have been measured in the present study; the former was found to be definitely influential and the latter influential to some degree but not in the way suggested by the original hypothesis. The demonstration of this unclear relationship and the significant effect of a lack of insight should serve as a warning against over-simplified "tests" of psychoanalytic hypotheses. Many of these hypotheses are exceedingly complex, involving the interaction of several factors for which too frequently the experimental psychologist has no adequate method of measurement. The lack of clear and concise definitions in the psychoanalytic literature is doubtless a result of this complexity but it is to be hoped that analysis of clinical and theoretical literature will allow experimentalists to derive definitions and descriptions for use as provisional laboratory hypotheses.

Conclusions

1. Those subjects who lacked insight into the amount of a given trait they themselves possessed tended, on the average, to attribute a greater amount of that trait to other people than did those subjects who possessed an equal amount of the trait but had insight. This fact is in accord with the principle of projection as redefined above.
2. Subjects lacking insight into their own possession of a trait assigned more extreme ratings to others on that trait than did subjects possessing insight. This difference was in the same direction from the mean as was the subject's own deviation in that trait.
3. Projection was not operative in influencing the judgments of all subjects on any given trait; its occurrence was apparently confined to those who lacked insight.
4. In the group of subjects who possessed insight a negative correlation was found between amount of trait possessed and amount attributed to others. This suggests the operation of a dynamic process, tentatively entitled *contrast-formation,* which has an effect opposite that of projection on judgments about others' personalities.
5. Judgments about other people with respect to both acceptable and unacceptable (reprehensible) traits showed the influence of projection and contrast-formation.
6. Those subjects who lacked insight into their own possession of reprehensible traits considered the reprehensibility of those traits greater than did those subjects who had insight.
7. There was no evidence that lack of insight was a general tendency influencing a given subject's judgments on all traits; it seemed to be specific to one trait rather than to be a general "personality trait" in itself.

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THE CONTRIBUTIONS OF TOPOLOGICAL AND VECTOR PSYCHOLOGY TO PSYCHIATRY*

by

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TOPOLOGICAL and vector psychology is a set of concepts and experimental data developed by Kurt Lewin and his co-workers which is making stimulating contributions to the understanding of normal and abnormal behavior. Many of the theories and results are of considerable psychiatric interest. Unfortunately they have appeared in widely scattered publications many of which are not generally available to psychiatrists. The purpose of this review is to bring together in a more accessible form those parts of the material which are particularly relevant to psychiatry. A brief outline of the leading concepts is followed by an account of the relevant experimental findings, and finally by a brief discussion of the relation of topological and vector psychology to current psychiatric thought.

LEADING CONCEPTS

The conceptual outlook of topological and vector psychology rests on the belief that psychology is ready to attempt the transition from the early type of scientific explanation it has of necessity hitherto used to a type characteristic of the more mature sciences. The more primitive type of explanation has two distinguishing features. It is historical, in that the behavior of an object is explained by reference to the chain of causes which led up to it. Furthermore, the behavior of the object is attributed to properties inherent in it. Psychology and psychiatry as very young sciences have held to these explanatory principles almost exclusively. They attempt to explain the present functioning of the person in terms of his life history, and inherent properties such as instincts, drives, and attitudes.

In contrast the more mature sciences, of which physics is perhaps the best example, explain an event not in terms of its history, but by showing it to be an exemplification of general laws; and by reference not to inherent properties but to the total field in which the event occurs. Thus for Aristotelian physics a stone fell because it had the property of heaviness; modern physics explains its fall by showing it to be the resultant of forces of gravity and air resistance acting upon it in accordance with certain general laws. It will be noted that this type of explanation adheres strictly to the *principle of concreteness*—that only existing facts can have effects. That is, it confines itself entirely to factors operating the instant the event occurs.

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Topological and vector psychology is a rather daring attempt to apply the same type of explanation as is used in physics to mentally integrated functioning. It tries to respect the principle of concreteness in that its explanations are couched in terms of the present rather than the past, and in terms of the field rather than the inherent properties of the person.

As will appear, it has not been possible to carry this through completely. Knowledge of a person's, or situation's, history is obviously necessary to an adequate understanding of the present status. Some of the experimental studies, in fact, have gone so far as to create a certain history in order to bring about a particular situation. Nor has it been possible to do without the concept of "drive" or "need." Nevertheless, topological and vector psychology makes a determined attempt to explain behavior in terms to existing person-environment relationships. It may be said to concentrate on the cross-section of the life history.

The description of a psychobiological event in terms of general laws must include all the facts which influence it. A fact in this sense is anything which has effects. Psychological facts fall into three broad groups—quasi-physical, quasi-social, and quasi-conceptual. Quasi-physical facts are all inanimate things and forces. Quasi-social facts are the interrelations of persons—ranging from a mother's influence over her child to social institutions. Quasi-conceptual facts exist only in the realm of thought, for example a mathematical problem. The prefix *quasi* indicates that these data are taken into account only to the extent they exist for the person at the moment in question. Thus, a physical object is not a "fact" for a person unless he is aware of it. Similarly, a mother's influence over her child may be a fact only for that child and no one else.

A systematic explanation of behavior must include all the facts influencing the person at a given moment. Lewin terms this totality the *life space,* and describes it by means of topological concepts.

Topology is a branch of mathematics which deals with those mathematical relations that can be defined without measurement. Topological space is composed of regions whose relations are defined in terms of parts and wholes, connectedness, and other non-quantitative properties, without regard to shape or size. Because they make possible the precise description of spatial relations, even when the space cannot be measured, topological concepts are peculiarly adapted to describing the life space, which varies greatly in measurability.

The life space may be regarded as being composed of *psychobiological facts coördinated to topological regions.* Perceived objects and persons, activities, phantasies, social groups, the person himself, and many other psychologically significant items may be represented as regions bearing specific topological relations to one another. These regions are separated by *boundaries* offering greater or less resistance to being crossed. Boundaries which offer appreciable resistance become *barriers.* For example, the life space of a college student who must go through medical school to become a physician may be described, as far as these facts are concerned, by indicating a region "medical school" lying between a region "physician" and a region "college," in which the person finds himself at present. The relations of these regions is such that the person cannot reach the "physician" region without passing through the "medical school" region. The boundary between the "college" and "medical school" regions is more of a barrier than the boundaries between the regions corresponding to the different college years, since it offers more resistance to the student. The value of such representations can only be conveyed by illustrations, to which the reader is referred.

Of particular interest to psychiatry is the concept of a dimension of the life space corresponding to *degrees of reality.* The more "irreal" levels of the life space—those of wishes, phantasies, hopes, and dreams—are characterized by greater *fluidity*—that is, boundaries can be shifted more easily, the boundary between the person and his environment is less distinct, and the structure of the life space is dependent to a greater extent on the person's needs. The life space of children is less definitely structured with respect to irreality and reality than the life space of adults, in that for the former phantasies are less distinct from hard facts, and wishes have a greater power to mould the psychological environment.

The person may be portrayed as a region in his own life space. For many purposes it is sufficient to regard this region as undifferentiated, but on closer analysis it becomes necessary to distinguish regions within the person. Topological analysis of the personality structure is still at a very primitive level. As a beginning, it seems possible to distinguish *inner personal regions,* corresponding to needs, goals, activities, "sentiments," and so forth, and a *surrounding motor perceptual region* through which the inner personal regions communicate with the outer world. Among the inner personal regions, some appear to be more peripheral, some more central, in the sense that the former are more easily influenced by environmental events and come more readily to overt expression than the latter. For example, a desire for a piece of candy might correspond to a more peripheral region, a deep religious conviction to a more central one. Children have a less differentiated personality structure than adults.

Topological characterization of the person and the life space describes the totality of possible events, but does not indicate which of the possibilities are realized. It sets the stage but does not give the action. Which of the possible behaviors actually occurs is determined by the *dynamic properties* of the situation. Dynamically behavior is determined by the person's needs, wishes, desires, cravings, and aversions, which may be considered to correspond to inner personal regions under tension. Such *tension systems* cause corresponding environmental regions to acquire positive or negative *valences.* Strength of valences varies with the strength of the corresponding tension systems. The interplay of valences and tension systems results in forces acting on the person, impelling him towards regions of positive valence, and away from regions with negative valence. Since such forces can be characterized with respect to direction and strength, they are regarded as *vectors.*

To take a simple example, if one has a desire to mail a letter this tension system causes mailboxes to acquire a positive valence, resulting in a vector propelling the person to a mailbox. The instant the letter is mailed, the corresponding tension system is discharged, the valence and vector disappear, and mailboxes again become objects of complete indifference.

Regions acquire valences for a person not only through his own tension system, but through the influence of other persons. For example, a mother can forbid a child to do certain things, thereby giving them a negative valence, or can give certain otherwise indifferent activities positive valences. Similarly, the physician can often strongly affect the valences in the psychological environment of a patient. Valences dependent on other persons are spoken of as *induced,* and the power to induce valences is represented as a *powerfield,* emanating from the inducing person.

A *conflict situation* results when a person is forced to remain under the influence of opposing vectors of approximately equal strength. He may be torn by two positive valences, like Buridan's ass between the piles of hay, or between two negative valences, like a child who is forced to choose between taking castor oil or receiving a spanking; or between a positive and a negative valence, as when a child hesitates to take a second helping of dessert because of fear of punishment.

The situation of *frustration* in which a person is prevented by a barrier from carrying out his desires, can be shown to be a special type of conflict situation. The barrier may prevent a person from reaching a positive valence, as when the difficulty of a problem hinders a desired solution, or may detain the person in a region with a negative valence, as when a person is held in a mental hospital against his will by legal and social barriers. Either type of frustrating situation, if prolonged, can be shown to lead to a typical conflict situation due to the fact that the barrier itself acquires a negative valence.

Certain logically deducible and experimentally observed effects of conflict situations are of considerable psychiatric interest. Prolonged conflict leads to a state of *tension* which tends to break down the boundaries between inner personal regions. The result is a temporary "de-differentiation" of the person, expressing itself in poorly differentiated behavior and thinking. A particular manifestation of this loss of differentiation is a relative breakdown of the distinction between reality and irreality, making it easier for the person to indulge in phantasied solutions of his conflict, or, in topological terms, to take flight into the level of irreality. The tendency for a person in a severe conflict situation to phantasy absurd solutions of his dilemma, and to have difficulty shaking these phantasies off has been experimentally demonstrated. The psychiatric implications of this fact are obvious.

Since the younger the person the less highly organized is his personality and behavior, the responses of a person disorganized by a conflict situation may superficially resemble those of a younger person. Conflict or frustration may thus be said to cause *regression*. Regression in this sense is not necessarily a return to earlier forms of gratification, but rather a simplification of behavior to resemble the behavior of a younger person.

To avoid misunderstanding, it should be mentioned that topological and vector psychology is not an attempt to reduce psychology to physics. The terms space, vector, and tension, refer not to physical concepts, but to mathematical ones, which are coördinated to psychobiological data. For example, psychological space differs from physical space in not being infinitely divisible and in many other properties.

EXPERIMENTAL RESULTS

The chief significance of topological and vector psychology for psychiatry lies in the experimental technique and results on which the conceptual system is based. Experimentation is guided by the *principle of successive approximation.* In contrast to the usual procedure of testing a particular function of the person while leaving the rest of the experimental situation undefined—which has so often led to trivial or misleading results—the method of successive approximation seeks first to characterize the situation as a whole and to guide further analysis always by reference to the total situation. The analysis at each level is couched in such terms that more detailed information will make it more precise, but not invalidate it. This approach minimizes the danger of incorrect emphasis or faulty analysis.

In experimentation the attempt is made to create a situation which subjects the person to certain stresses. His responses are first studied in their entirety, and particular aspects are singled out for more intensive study only as they emerge as important in the light of knowledge of the total situation.

Dembo and Hanfmann's study of the patient's psychological situation on admission to a mental hospital is at once an example of the general approach of topological and vector psychology, and a demonstration of the adequacy of these concepts to an apparently complex situation. These investigators utilized a ready-made experimental situation—the reading of a letter of information and welcome to newly arrived patients at a mental hospital. They arranged to deliver the letter to 100 consecutive patients, and, in accordance with the general procedure outlined above, tried to record systematically everything that occurred. On the basis of this material six general types of reaction to the hospital situation were distinguished as follows: primitive drive out of the hospital; insight into the basic features of hospitalization; refusal to accept the reality of the hospital situation; preoccupation with psychosis; acceptance of the hospital as a place of refuge; and, the narrowed situation, in which the patient did not recognize the hospital situation as such, but was guided from minute to minute by minor agreeable or disagreeable happenings. The investigators were able to characterize the first five of these situations in topological and vector terms, creating a solid foundation for any more detailed analyses which may later be attempted. The study also resulted in certain practical conclusions as to which types of patients would benefit most by careful explanation of the hospital situation, and which could be most helped by the social worker, for example. In general, the attitude towards hospitalization was found to be largely independent of the diagnostic group, emphasizing the importance of psychological analysis in directions other than purely diagnostic.

The properties of inner personal tension systems may be studied by interrupting a person who is engrossed in an activity and observing the conditions which influence the strength of his tendency to return to it. Rickers-Ovsiankina, after using this technique extensively on normals, has applied it to schizophrenics. She first studied the total situation by simply releasing the patient among a variety of tasks, leaving him alone and observing his behavior from another room through a one-way screen. She found that, although the differences between schizophrenics and normals in this situation were not striking, schizophrenics tended to show less depth of response to the individual tasks, and a greater tendency to undirected activity. Among the schizophrenics paranoids behaved most like normals. The indeterminates, consisting chiefly of deteriorated cases, showed almost complete inability to form interests of any consistency. When interrupted in a task, schizophrenics showed a much lower proportion of spontaneous resumption than normals—about 40 per cent as opposed to about 70 per cent. Moreover, the frequency of spontaneous interruptions was appreciably greater in schizophrenics than in normal persons. It is concluded that "conditions which in normals generally lead to the formation of firmly segregated tension systems, in schizophrenics result in systems which tend to be of a weak and poorly differentiated nature."

The behavior of the level of aspiration—the person's expressed goal with respect to future performance in a task—appears to be a revealing index of certain aspects of personality. Hausmann found that its behavior expressed such personality attributes as rigidity in paranoids, impairment of judgment in schizophrenic reactions, and "sensitivity to load" in certain neurotics. Korsch-Escalona found that the level of aspiration of hypomanics tended to start very high, was very labile, and showed a marked sensitivity to failure. The level of aspiration of depressives was guided very largely by what the patient thought was expected of him and was less influenced by success and failure experiences as such. Unpublished results seem to confirm the lability of the level of aspiration in manic patients and bring out in addition a contrasting fixity of the level of aspiration in depressed patients.

Korsch-Escalona also found that so-called retardation in depressives had two distinguishable components: motor retardation shown by slowness of performance and decision retardation manifested by delay in choosing a level of aspiration. Decision retardation was seen chiefly in reactive depressions apparently resulting from an environmental conflict of central importance to the patient. Pure and possibly physiologically determined motor retardation seemed more characteristic of recurrent simple depressions lacking obvious environmental precipitants.

One of the most valuable methods of experimental personality study has been Dembo's technique of producing severe frustration and conflict by confronting a subject with an apparently soluble but actually insoluble task. Brown has ingeniously combined this technique with a test of the level of aspiration and a test of the tendency to resume unfinished tasks and has subjected psychotics of all sorts to this battery. In general, he found that the behavior of psychotic and psychoneurotic persons in a frustrating situation is much more variable and unpredictable than that of normals, schizophrenics showing the widest deviation from normals and paranoids the least. The behaviors of the classical diagnostic groups showed marked overlap indicating that the categories do not represent discrete disease entities. He confirmed certain of the findings on schizophrenics and manics described above. Obsessives were found to show very marked tension and an unusually high level of aspiration, which tended to rise sharply under social pressure.

The feeble-minded have been studied by the above techniques and two additional methods for investigating the properties of tension systems, satiation of tension systems and discharge of tension systems through substitute activities. In satiation experiments the feeble-minded were either completely absorbed in the task or interrupted the activity completely, in contrast to the more continuous and gradual course of satiation in the normal child. With respect to substitute actions feeble-minded showed a paradoxical behavior. On the one hand they tended to become fixed on a task, making the occurrence of substitute activity very difficult. On the other they tended to be readily satisfied with very inadequate substitute actions, for example, after failing to throw a ball they might attain complete satisfaction by making a gesture of throwing. In the level of aspiration situation the feeble-minded remained undiscouraged by repeated failures. Lewin has shown that these results as well as many other generally observed characteristics of the feeble-minded—their stereotypy, "concreteness" of thinking, gullibility, and obstinacy—may be readily explained by the simple hypotheses that their personality contains fewer innerpersonal regions, and that the boundaries of these regions are both stronger and more "brittle" than in normal children of the same age. Incidentally, these considerations emphasize that feeble-mindedness is not merely intellectual deficiency, but involves defects in the entire personality.

A final experimental study of psychiatric interest deals with the production of regression in young children. This was achieved by placing them in a frustrating situation in which they could clearly see but were denied access to some very attractive toys. It was shown that in such a situation a child's behavior tends to become more primitive, thus resembling the behavior of a younger child. The degree of "primitivization" was positively related to the degree of frustration as measured by other means. Regression of this type seems to be linked to disorganization of the personality due to emotional tension, and to a decrease in security leading to a decrease in time perspective, among other factors. This study also contains a valuable theoretical analysis of personality organization.

Discussion

Topological and vector psychology in many respects stands on common ground with psychoanalysis and psychobiology, the dominant trends in psychiatric thinking. It shares with them the conviction that psychological phenomena are legitimate objects for scientific study, and like them accepts as a psychological fact anything which makes a difference to the person. In harmony with current trends it utilizes only psychobiological concepts to describe psychobiological data, avoiding explanations in terms of physics, chemistry or physiology. That is, its concepts are coördinated to the level of integration of the material with which they deal. Like both psychobiology and recent psychoanalysis it stresses the influence of social and environmental factors on the person. Finally, in common with current thought, it emphasizes penetration to an understanding of the particular case, as opposed to questions of classification.

Topological and vector psychology goes beyond most present psychiatric thinking in three respects. In the first place it has a higher goal as regards concept formation. Its concepts are not merely a loosely knit body of ideas, as are those of psychoanalysis, for example, but are precisely defined and form a logically unified system. Although the concepts may sacrifice some flexibility and range of usefulness in order to gain precision and logical unity, their breadth of applicability is remarkably wide. They have proved adequate to problems of animal psychology, normal and abnormal human psychology, and sociology. A second contrast with most current thought is the insistence on the principle of concreteness with its implication that the explanation of present behavior must be found in present factors, not those of the past. Finally, it seeks the causes of behavior not primarily in properties of the person, but in personal-environment relationships.

The properties of the conceptual system favor experimentation. The definiteness and logical coherence of the concepts favor the formulation of "crucial" experiments able definitely to prove or disprove a hypothesis. Experimentation is further encouraged in that the significant factors are believed to be found in the modifiable present rather than in the irrevocable past, and in accessible person-environment relationships rather than in inaccessible qualities of the person. As a result, topological and vector psychology stresses experimental study of the effects of environmental manipulations on behavior, as opposed to clinical case study.

Clinical case study, of course, yields indispensable collections of data, and remains the only way of learning enough about the person to make therapy possible. It may also be used to investigate problems not yet amenable to experimental formulation. On the other hand, experimental results have the great advantages of being objectively verifiable, and being able conclusively to prove or disprove a hypothesis, thus forming a firm basis for further research. Hence, although experimental methods are a long way from displacing case study in psychiatry, they offer a valuable supplement to it.

Topological and vector psychology, then, makes possible an experimental approach to psychobiological problems at the highest level of integration—human motivation, behavior, and thinking. To my knowledge no other system of psychological theory has achieved this to the same degree. Although many of the experimental results described above may appear self-evident, this does not lower their value as verifications of the conceptual system, which must be adequate to obvious as well as to obscure facts. Furthermore, even apparently self-evident facts must be verified experimentally before they are fit to join the body of scientific knowledge. Nor can it be doubted that many of the results so far obtained represent distinct contributions to the knowledge of psychodynamics.

The central contribution of topological and vector psychology seems to be that it subsumes a wide and apparently diverse range of material under a few very simple concepts, which make possible at the highest level of integration a strictly experimental approach to certain psychobiological problems.

SUMMARY

Topological and vector psychology attempts to describe the behavior of a person at a given moment in terms of the interplay of all the factors operating in his life space at that instant. The structure of the life space is described in terms of regions bearing certain topological relations to one another. A dimension of the life space corresponding to degrees of reality is distinguished, the more "irreal" levels being characterized dynamically by greater fluidity. The dynamics of the life space are described in terms of the positive and negative valences of regions, which either depend directly on tension systems in the person, or are induced by the powerfield of someone else. Correlated to valences are vectors causing the person to locomote away from negative valences and towards positive ones. The person is conceived as a region structured into inner-personal regions corresponding to tension systems, and a surrounding motor-perceptual region, through which the inner-personal regions communicate with the environment. Conflict situations, resulting from the interplay of approximately equal opposing vectors, or from action in the direction of a vector being blocked by a barrier, produce a state of tension. This leads to a breakdown of the boundaries between innerpersonal systems. The resulting de-differentiation of the personality may be referred to as "regression," since it is equivalent to the person becoming more childlike.

These concepts differ from those current in psychiatry in their higher degree of logical precision and unity, and in focussing attention on the present person-environment relationships rather than on developmental history and innate properties of the person. As such they lead to experimentation rather than case study. The following experimental results are of particular interest to psychiatry:

The attitudes of newly admitted patients to a mental hospital have been classified in a simple and illuminating manner having practical implications. Schizophrenics have been shown experimentally to have difficulty in forming and maintaining peripheral tension systems. In the level of aspiration situation manics have been demonstrated to have very labile levels of aspiration which are extraordinarily sensitive to failure, while depressives tend to have rigid levels of aspirations, and let themselves be guided by what they believe is expected of them. Depressive retardation has been shown to have two experimentally distinguishable components, motor retardation and decision retardation. A battery of simple experiments has been devised to study reactions to frustration, interruption, and failure. The phenomenon of "regression" has been experimentally produced and analyzed. Certain differences in the personality structure of normals and feeble-minded have been experimentally demonstrated. All the above studies find that differences in the personality attributes or attitudes studied fail to correspond accurately to the usual nosological groupings, suggesting that the latter represent convenient groupings of symptoms rather than actual disease entities.

Although vast stretches of psychobiological material are still not amenable to the experimental approach of topological and vector psychology, the results so far obtained suggest that it has great and increasing promise as a supplement to the usual methods. In its type of concept formation it probably foreshadows the path psychiatry must take if it is ever to become a mature science.

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FREUDIAN MECHANISMS AND FRUSTRATION EXPERIMENTS *

by

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THE discussion of this topic will deal with three distinct problems: (*a*) the nature of frustration experiments; (*b*) the nature of the freudian mechanisms; (*c*) the relation of frustration experiments to the freudian mechanisms, namely, whether frustration experiments presuppose the freudian theory and whether they investigate phenomena pertaining to the freudian theory.

I

Frustration experiments bring about frustration in an experimental situation, controlling and varying the field conditions and observing the behavior of the human or animal subject which arises as a result of frustration. This type of experimentation is valuable, but it has three significant limitations:

First, it is concerned with the field conditions as they exist here and now, and it views the subject who is a product of his past experience, as a static part of the field conditions. The individual differences in quality and degree of reaction to frustration will lead necessarily to a more or less explicit typology, as there seems to be no direct path from the field structure investigation to the genetic understanding of individual differences.

Second, the reactions to frustration (established by observation of behavior, or reports of introspection) will necessarily be meaningful only in terms of the field conditions explaining the dynamics of the frustration situation and will say but little about the genesis of the psychic functions responsible for the reactions of frustration and the individual differences in respect to them.

Third, a limitation is imposed on the quality of frustration by the nature of the experimental situation. Since the frustrated wish or striving in these experiments represents only a sample of the strivings which are or can be

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subject to frustration in everyday life, the experimental findings will give only partial information on frustration. It seems also probable that the strivings frustrated in the experiments are usually not central strivings of the subject but rather some of the more peripheral ones.

Despite these limitations frustration experiments are of practical and theoretical significance. J. F. Brown in his experiments found that different groups of psychiatric patients react differently to frustration and that thus such experiments may be useful diagnostically. In my experience with the Vigotsky Test I have found definite differences in the reaction patterns of different psychiatric groups and character types to this usually frustrating test situation. There seems to be some basis in both J. F. Brown's and my material for hoping that a scale of frustration tolerance could be worked out. Thus, a static, typological, diagnostic, measure inferred from the subject's reactions to the frustrating field situation is one advantage offered by these frustration experiments. But why a hysteric or a paranoiac should react exactly as he does to frustration is apparently beyond the scope of these experiments as only the structure, but not the origin, of these reactions is investigated by them.

While the frustration experiments can be designated as striving to establish ahistorical laws, the freudian theory and the freudian mechanisms strive toward a historical, genetic understanding. The immediate reaction of the subject to a frustrating or any other situation is viewed in terms of his total personality—his organization of past experience on the basis of his instinctual needs. It is a genetic theory par excellence. In so far as it pays attention to existing field conditions at all, freudian theory emphasizes that a real understanding of the field conditions cannot be achieved unless we have sufficient knowledge of the individual's organization of past experience in terms of the organization of his instinctual needs. Thus it is felt that the structure of the field is determined by this organization of the past experience of the subject.

II

The frustration experiments can be viewed in two different ways from the point of view of freudian theory. First, these experiments give a detailed analysis in dynamic terms of the subject's reaction to a frustrating situation such as is rarely obtained and little investigated by the psychoanalyst and thus a highly welcomed and interesting topic for him. He is interested in using it practically for clinical typology, for diagnostic, and eventually prognostic purposes. He is interested in it theoretically inasmuch as he hopes to be able to extend his genetic theory to the point of incorporating these very concrete *ad hoc* dynamics of behavior.

The immediate bearing, however, of the frustration experiments on the freudian mechanisms seems to be quite unclear. Let us consider for example the aggression arising as a result of frustration described by Dembo (1932). It is obvious for the analyst that the sequence 'frustration = aggressive behavior' may occur, and does occur frequently in actual life situations. If, however, aggression *per se* is understood to be a result of frustration, a conclusion drawn for instance by the Yale group,[1] the psychoanalyst will protest. For him 'aggression' and aggressive behavior are not identifiable, the second being only a mobilization of the first by the field conditions, the first being an instinctual need not elicited by field conditions but rather an integral part of every field condition. In the psychoanalyst's experience aggression is as genuine a need as any; aggression is mobilized and becomes phenomenal in varying field conditions, not only in a frustration situation. Aggression as such is understood genetically by the analyst who would feel that the frustration experiments are only partial investigations, limited by their ahistorical approach.

Another example would be the phenomenon of 'going out of the field' described by Dembo. Freudian theory discusses similar mechanisms. Escape reactions, such as avoidance of the feminine rôle by a woman or of the masculine rôle by a man, might be considered as steady repetitions of a 'going out of the field' of a frustrating situation. In this case, however, it is even more obvious than in the previous one that the rôle of the actual field conditions is relatively insignificant as compared to the rôle of the genetic historical factors operating. Regression could be another example. It is extremely interesting to know that the drawing of a child after frustration shows features which are on a relatively lower developmental level than the one shown by his drawings before the frustrating situation. The mechanism of regression as observed and described by the psychoanalyst is *quantitatively* more significant and covers a much greater portion of the life span, and interferes grossly with the whole of the individual's functioning. It appears to be *qualitatively* different as well, inasmuch as (in terms of frustration) it comes about as the result of a long series of frustrations and has at its core deeply rooted conflicts of instinctual origin.[2]

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[1] *Frustration and Aggression.* By John Dollard, Leonard W. Doob, Neal E. Miller, O. H. Mowrer, Robert R. Sears, in collaboration with Clellan S. Ford, Carl Iver Hovland, Richard T. Sollenberger. (Institute of Human Relations, Yale University.) New Haven: Yale University Press, 1939.

"The basic hypothesis which has been presented is that aggression is always a consequence of frustration. It is clear from common observation and from a consideration of the examples of this relationship given in Chapter I, however, that aggressive behavior may take many forms. Sometimes aggression is directed at the frustrating agent; at other times it seems to be aimed at innocent bystanders. Some forms of aggression are vigorous and undisguised; others are weak or subtle and roundabout. While the simple statement that frustration produces aggression, therefore, may add something of value to the problem of predicting human behavior, other psychological factors besides frustration itself must be taken into consideration if a more adequate understanding of the specific forms that aggression takes is to be gained. In this and the succeeding chapter a more systematic analysis of four groups of factors will be made:

"1. Those governing the strength of instigation to aggression; i.e., the amount of frustration.

"2. Those related to the inhibition of aggressive acts; i.e., the effects of punishment.

"3. Those determining the object toward which aggression is directed and the form this aggression takes; i.e., the displacement of aggression.

"4. Those related to the reduction of instigation to aggression; i.e., the catharsis of aggression."

The similarity of the phenomena observed in the frustration experiments to the freudian mechanisms is obvious. The gravest danger in dealing with them lies in the possibility that one may lose sight of the fact that our knowledge about them has been gathered by a methodology basically different from that of the freudian mechanisms. The freudian mechanisms reflect vicissitudes of instinctual needs inferred from historical investigations. The reactions to frustration in the frustration experiments are ahistorically established dynamics of a field situation out of which no conclusion as to the genetic relation between frustration and its sequelæ should be drawn. In other words, it is interesting to know that a frustrating field situation may result in aggressive behavior, in anger and destructurization of the field by 'going out of the field,' or in regression. No doubt these results give an adequate description of how frustration in the experimental situation resulted in aggression, repression, 'leaving the field,' and 'destructurization of the field.' It cannot be claimed, however, that the experimental results are proof of the existence of a genetic one-to-one relationship between frustration and those phenomena which were found in the experimental situation to be its sequelæ.

III

The last question is of the relation of freudian mechanisms to frustration experiments. Historically, the freudian discoveries revealed the central problems and provided the incentive for such investigations. If this experimentation and its highly interesting results should become an integral part of a science of man's reaction, which will necessarily be an historical science and not a physical-ahistorical one, it will have to take into account freudian mechanisms and center its interest on producing more and more experimental similes to those mechanisms. Further experimentation will have to pay attention to freudian theory lest the concepts, 'aggression,' 'repression,' etc., express isolated observations without hope of incorporation into a theory of the genetic continuum of human reaction. Freudian theory was the cradle of these experiments and systematic exploration of the freudian mechanisms is their final goal. Although they are of value to the psychiatrist and psychoanalyst, it would be a grave error to assume that at present these experiments measure or even reproduce freudian mechanisms. A discussion of the memory-experimentation concerning 'repression' will elucidate this point. The concept of repression as well as that of frustration attracted the interest of experimental psychologists. For forty years unceasing experimentation has tried to prove or to disprove the freudian theory of repression; approximately one hundred and fifty different experiments were conducted toward this end. Scrutiny of this experimentation soon reveals that the freudian contention that 'we tend to forget the disagreeable' is isolated from the context of the freudian theory.

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[2] Fromm-Reichmann, Frieda: *Transference Problems in Schizophrenics, Psychoanalytic Quarterly*, VIII (1939), 413. "Traumatic experiences in this early period of life will damage a personality more seriously than those occurring in later childhood such as are found in the history of psychoneurotics. The infant's mind is more vulnerable the younger and less used it has been; further, the trauma is a blow to the infant's egocentricity. In addition early traumatic experience shortens the only period in life in which an individual ordinarily enjoys the most security, thus endangering the ability to store up as it were a reasonable supply of assurance and self-reliance for the individual's later struggle through life. Thus is such a child sensitized considerably more towards the frustrations of later life than by later traumatic experience. Hence many experiences in later life which would mean little to a 'healthy' person and not much to a psychoneurotic, mean a great deal of pain and suffering to the schizophrenic. His resistance against frustration is easily exhausted.

"Once he reaches his limit of endurance, he escapes the unbearable reality of his present life by attempting to reëstablish the autistic, delusional world of the infant; but this is impossible because the content of his delusions and hallucinations are naturally colored by the experiences of his whole lifetime."

The experimentation which developed showed that there is a difference in remembering of words judged pleasant and those judged unpleasant, between what is liked and what is disliked, between success and failure, between associations with pleasant and with unpleasant sensory stimuli, etc. These were interesting results worth while knowing. Their bearing on the concept of repression, however, appears to be quite unclear. Repression is the concept, derived from clinical observations, that the significant traumatic events underlying neurosis are usually forgotten and furthermore, that outstanding lapses of memory and parapraxes are due to the connection of this forgotten or distorted material with the originally repressed traumatic events. One might hypothesize that the difference in recall of pleasant and unpleasant, etc., material is a distant relative or some kind of a derivative of repressed material although this would be stretching the point. Another hypothesis seems more plausible: there exists an emotional stratification of memory in which judgmental pleasantness and unpleasantness are of a rather peripheral significance, success and failure perhaps somewhat more central, and at the core of this stratification are those instinctual strivings which are the main motives of human life, subject to the memory manifestations of repression phenomena.

In all of the general psychological experimentation on repression, perhaps only Kenneth Diven and A. A. Sharp have demonstrated phenomena related to repression. Experimental demonstration of repression and affective transformation of memory material is rather more demonstrable in clinical experimentation as in the work of Despert, the hypnotic work of Erickson, the investigations of Schilder on the psychology of paresis, and that of Betlheim and Hartman on the psychology of the Korsakow syndrome.

In the field of frustration the result might be similar if the problem of frustration be investigated with an eye on the question: 'What is frustration?' The freudian definition of frustration refers to frustration of libidinous strivings.[8] One may investigate the effects of the frustration of less significant, less central, more peripheral strivings. These investigations will be of as great interest to us as the investigation of the special memory phenomena investigated in the wake of the freudian hypothesis of repression. These investigations might show usual developmental effects of frustration on different levels of the emotional hierarchy, similar to the findings in memory experimentation. Experimentation with memory as well as with frustration has already shown great individual differences, indicating that the 'objectively' identical frustrations may elicit frustrations on different levels in different individuals. There is some hope that investigations of memory experiments with both repression and frustration will contribute to our knowledge of a hierarchy in which instincts, drives, needs, quasi needs, attitudes, sentiments, determining tendencies, interests, affects, preferences, pleasantness, unpleasantness, etc., may be some of the levels. Experiments with memory and repression seem to indicate that affective influences on the different levels of this hierarchy can elicit very different effects: reinforcement, weakening, obliteration, distortion, condensation, displacement, etc., of memories. It might be that in frustration experiments a regard for these hierarchic levels will make the differential reactions to frustration amenable to more concrete individual analysis.

SUMMARY

The ahistorical nature of experimentally induced frustration is contrasted with the historical nature of freudian mechanisms.

The similarity of experimentally elicited frustration mechanisms to clinical psychoanalytic frustration mechanisms is described. The difference in the scope of both is stressed.

The typological and diagnostic usefulness of differentiating types of reaction to frustration is emphasized. The theoretical connection between the experience of frustration as clinically observed, and frustration as experimentally elicited, is problematic.

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[8] Freud: Coll. Papers, II. London: Hogarth Press, 1933, pp. 113–115. "The most immediate, most easily discerned, and most comprehensible exciting cause of the onset of neurotic illness lies in that external factor which may generally be described as frustration. The person was healthy as long as his erotic need was satisfied by an actual object in the outer world; he becomes neurotic as soon as he is deprived of this object and no substitute is forthcoming."

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45

CONFLICT, FRUSTRATION, AND THE THEORY OF THREAT *

by

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In a previous paper the concept of frustration [1] was analyzed and some doubt was thrown on its validity as ordinarily used. It was suggested that the concept included two completely different classes of psychological phenomena. One could be called sheer deprivation and it was maintained that its secondary effects were not ordinarily psychopathological. The second set of phenomena were labeled threatening frustrations and these were conceived to have the psychopathogenic effects ordinarily attributed to frustration in general. Thus the concept of psychological threat or threat to the basic needs of the organism was conceived to be more fundamental to any discussion of psychopathology than the concept of frustration. But it was indicated briefly in this paper that the concept of threat was not simply a subclassification of the head "frustration," but cross-cut this concept and included many more phenomena that have nothing to do with frustration. In the present paper I wish to discuss the concept of threat in connection with conflict phenomena as well and to give fuller description of the role that threat to the organism plays in the abnormal personality. Since feelings of frustration and conflict are ordinarily conceived to be the main pathogenic mechanisms, any substitute for these concepts constitutes a new theory of psychopathogenesis.

TYPES OF CONFLICTS

The single concept of conflict can be cross-cut by the concept of threat just as we have done for frustration. The tentative classification is as follows:

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[1] A sharp distinction must be made between the frustrating situation and the subjective feeling of frustration. In this paper we shall be speaking about these subjective reactions of deprivation, frustration, conflict, or threat, except where it is specifically stated that the situation is meant. See on this point Britt and Janus.

1. *Sheer choice.* This is conflict in the simplest sense of all and would include such examples as a rat at a choice point in the maze. The daily life of every human being is filled with numberless choices of this sort. I would conceive the difference between this kind of choice and the next type to be discussed to be as follows: Type 1 involves a choice between two paths to the same goal, this goal being relatively unimportant for the organism, or else not being threatened at all. The psychological reaction to such a choice situation is practically never a pathological one. As a matter of fact, most often there is no feeling of conflict at all.

2. *Choice between two paths to the same (vital, important) goal.* In such a situation the goal itself is important for the organism but there are alternative ways of reaching this goal. The goal itself is not endangered. The importance or non-importance of the goal is, of course, a matter to be determined for each individual organism. What is important for one may not be for another. An example could be a woman trying to decide whether to wear one pair of shoes or another, one dress or another, to a party which happened to be important for her and at which she hoped to make a good impression. When the decision is made here the apparent feeling of conflict usually disappears. It is true, however, that such conflicts may become very intense as in a woman's choosing, not between two dresses, but between two possible husbands. We are reminded here of Rosenzweig's distinction between "need-persistent" effects and "threat" effects.

3. *Threatening conflicts.* This type of conflict is fundamentally different in kind from conflicts of the first two types. It is still a choice situation but now it is a choice between two different goals, both vitally necessary. Here a choice reaction usually does not settle the conflict since the decision means giving up something that is almost as necessary as what is chosen. Giving up a necessary goal or need-satisfaction is threatening, and even after the choice has been made, threat-effects persist. In a word, this sort of choice can eventuate only in chronic feelings of conflict and in chronic thwarting of a basic need. These are pathogenic.

4. *Catastrophic conflict.* This might better be called pure threat with no alternative or possibilities of choice. All the choices are equally catastrophic or threatening in their effects or else there is only one possibility and this is a catastrophic threat. Such a situation can be called a conflict situation only by an extension of the meaning of the word. This can be seen readily if we take the example of a man who is to be executed in a few minutes, or the animal who is forced in the direction of a decision which he knows to be a punishing one and in which all possibilities of escape, attack, or substitute behavior are cut off, as is the case in many experiments on animal "neuroses."

CONFLICT AND THREAT

Speaking from the point of view of psychopathology we must come to the same conclusion that we came to after our analysis of frustration. There are, in general, two types of conflict situations or conflict reactions, non-threatening and threatening. The non-threatening conflicts are quite unimportant, since they are not ordinarily pathogenic; the threatening types of conflict are important because they very often are pathogenic.[2] Again it would seem that when we speak about a feeling of conflict as an originator of symptoms we should do better to speak rather about threat or threatening conflict since there are types of conflict which do not create symptoms.

We may then proceed to a reclassification of our concepts in the general field of psychopathogenesis. We may speak first of deprivation and, secondly, of choice and consider them both to be non-pathogenic and, therefore, unimportant concepts for the student of psychopathology. The one concept that is important is neither conflict nor frustration but the essential pathogenic characteristic of both—namely, threat of thwarting of the basic needs of the organism.

THE NATURE OF THREAT

But again it is necessary to point out that the concept of threat includes phenomena that are subsumed neither under the head of conflict nor frustration as these words have been used in the past. Severe illness of certain types can be psychopathogenic. A person who has had a bad heart attack very frequently behaves in a threatened fashion. It is my impression that much illness in young children is directly threatening quite apart from the deprivations that are imposed thereby.

Another kind of patient in which general threat has been demonstrated is the brain-injured patient as studied by Gelb, Goldstein, Scheerer, and others. The only way in which these patients can be ultimately understood is to assume that they feel threatened. It has been pointed out elsewhere that all organic-psychotic patients of any type may be considered to feel basically threatened. In these patients the symptoms can be understood only if studied from two points of view—first, the direct effect on the organism of the damage to function or loss of function of whatever kind (loss effects), and, secondly, the dynamic reactions of the personality to these threatening losses (threat effect).

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[2] I wish to warn the reader not to read logical fallacies into these statements. Threat is not *always* pathogenic; there are normal healthy ways of handling it, as well as neurotic or psychotic solutions. Furthermore, an apparently threatening situation may or may not produce feelings of psychological threat in any particular individual. A bombardment or threat to life itself may not be as threatening as a sneer, a snub, the defection of a friend, an illness in one's child, or an act of injustice perpetrated against a total stranger a thousand miles away.

From Kardiner's monograph on *Traumatic neuroses* we find that we can add the effect of very basic and severe traumatization to our list of threat effects which are neither conflict nor frustration.[8] According to Kardiner, these traumatic neuroses are the effect of a basic threat to the most basic executive functions of life itself—walking, talking, feeding, and the like. We might paraphrase his argument as follows:

The person who has gone through a very severe accident may conclude that he is not the master of his own fate and that death is ever at his door. In the face of such an overwhelmingly stronger and more threatening world some men seem to lose confidence in their own abilities, even the most simple ones. Other milder traumata will of course be less threatening. I would add that such a reaction is to be expected only in people with a certain kind of character structure which predisposes them to threat, for instance people who feel unsafe, or insecure or weak.

The imminence of death for whatever reasons also may (but not necessarily) put us in a state of threat for the reason that we may lose our basic self-confidence here—when we can no longer handle the situation, when the world is too much for us, when we are not masters of our own fate, when we no longer have control over the world or over ourselves, certainly we may speak of feelings of threat. Other situations in which "there is nothing we can do about it" are also sometimes felt to be threatening. Perhaps severe pain should be added in this category. This is certainly something that we can do nothing about.

Perhaps it is possible to extend the concept to include phenomena that are ordinarily included in a different category. For instance, we might speak of sudden intense stimulation, being dropped without foreknowledge, losing footing, sheer pain, anything unexplained or unfamiliar, the upset of routine or rhythm in the child as threatening to the child rather than as emotion-producing.

We must of course also speak of the most nuclear aspects of threat, namely, the direct deprivation, or thwarting, or danger to the basic needs—humiliation, rejection, isolation, loss of prestige, loss of strength —these are all directly threatening.

Often I have seen an extension of this threat to the defensive system of the individual. That is, we may expand the above statement to read "danger to the basic needs or the necessary conditions upon which they rest for the individual." If we had the space this would involve a discussion not only of specifically individual defense mechanisms, *e.g.*, identifying keeping a job with masculinity, but also broader conditions like freedom to speak, to complain, to be ambitious, to move away, to determine one's own fate. We may summarize by saying that, in general, all the following are felt as threatening in our sense: danger of thwarting of the basic needs, or the conditions upon which they rest, threat to life itself, threat to the general integrity of the organism, threat to the integration of the organism, and threat to the organism's basic mastery of the world.

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[8] Again it must be pointed out that a traumatic situation is not the same as a feeling of traumatization, *i.e.*, a traumatic situation *may* be psychologically threatening, but it doesn't *have* to be.

Finally, it might be said that however we define threat, certainly there is one aspect which we must never neglect. Clearly an ultimate definition, no matter what else it might include, must certainly be related to the basic goals or needs of the organism. This means that any theory of psychopathogenesis in turn must rest directly upon theory of motivation. For this reason as well as for others the concept of threat and the theories arising therefrom must be considered to be dynamic in their nature.

Dynamic theory as well as various empirical findings would indicate the necessity for individual definition of threat. That is, we must ultimately define a situation of threat in terms of the individual organism facing its particular problem. Thus, frustration and conflict both have very frequently been defined in terms of external situation alone rather than in terms of the organism's internal reactions to or perception of these external situations. Among the most persistent sinners in this respect have been some of the researchers with the so-called "animal neuroses."

Still another important question of definition is involved here. How shall we know when any particular situation is perceived by the organism as a threat? For the human being, this can easily enough be determined by any technique which is adequate to describe the total personality, for instance, the psychoanalytic technique. Such techniques allow us to know what the person needs, what he is missing, and what endangers him. But for animals, the situation is more difficult. Here we become involved in circular definition. We know a situation is threatening when the animal responds with symptoms of threat. That is, the situation is defined in terms of responses and the responses are defined in terms of the situations. Circular definition is ordinarily not held in good repute, but we shall have to learn that along with a generally dynamic psychology must go an increase in respectability of the so-called circular definition. In any case, for practical laboratory work this is certainly not an insuperable obstacle.

A last point which would certainly follow from dynamic theory is that we must always consider the feeling of threat to be in itself a dynamic stimulation to other reactions. No picture of threat is complete in any organism unless we know also what this threat-feeling leads to, what it makes the individual do, how the organism reacts to the threat. Certainly in the theory of neuroses it is absolutely necessary to understand both the nature of the feeling of threat and also the reaction of the organism to this feeling.

THE THREAT CONCEPT IN ANIMAL WORK

An analysis of the work on behavior disturbances in animals[4] indicates that it is ordinarily conceived in external or situational rather than in dynamic terms. It is the old mistake of considering that control of the psychological situation is achieved when the external experimental set-up or situation is made constant. (See for instance the emotion experiments of ten or fifteen years ago.) Ultimately, of course, only that is *psychologically* important which the organism perceives or reacts to, or by which it is affected in one way or another. This fact, as well as the fact that every organism is different from every other, must be recognized not just verbally, but also as it influences the set-up of our experiments and the conclusions drawn therefrom. For instance, Pavlov has shown that the basic physiological temperament of the animal must be of a certain kind or the external "conflict situation" will not produce any internal conflict. And, of course, we are interested not in conflict situations, but only in feelings of conflict in the organism. We must recognize also that the unique history of the individual animal will produce varying individual reactions to a given external situation. [See the recent work of Liddell and his collaborators.] We have been shown by the work with white rats that in some cases a peculiarity of the organism is all-important in determining the presence or absence of breakdown to identical external situations. Different species will have different resources with which to perceive, to react to, to be threatened or not threatened by an external situation. Certainly the concepts of conflict and frustration are used loosely in many of these experiments. Furthermore, because of neglect of the individually defined character of threat to the organism certain differences in the reactions of various animals to an identical situation seem unexplainable.

A better phrasing than those ordinarily used in the literature is that given by Scheerer of "requiring the animal to do something that he cannot do." This is a good concept because it does cover all the known animal work but we should make more explicit some of its implications. For instance, taking away from the animal things which are important for it may produce psychopathic effects of a kind similar to those produced by asking the organism to do something that it cannot do. In the human being the concept must include, in addition to the factors mentioned, those of the threatening character of certain illnesses and certain damages to the integrity of the organism. In addition, we should explicitly recognize the factor of temperament which allows an animal to face a situation in which it is required to do something impossible and to which it responds in a non-psychopathic fashion simply by not caring about the situation, by being placid about it, or perhaps even by refusing to perceive it. Perhaps this sharper character can be achieved in part by adding to Scheerer's phrasing a statement of strong motivation, thus "Psychopathic reactions occur when the organism is faced with a task or situation which is impossible for it to solve or cope with, and *which it wants very much to solve or which it must solve.*" Even this, of course, would still fall short because it would not include some of the phenomena that have been mentioned. However, it has the virtue of being a rather practical statement of the threat theory for laboratory purposes.

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[4] Obviously the concepts presented in this paper are so general that they apply to *many* types of experimental work. The sample chosen could be augmented by, for instance, current researches on repression, forgetting, perseveration of incompleted tasks, as well as the more direct researches on conflict and frustration.

Another point is that, because of neglecting to distinguish between non-threatening choice situations and threatening noes in the animal and between non-threatening frustration situations and threatening ones, the behavior of the animal seems inconsistent. If the animal is conceived to be in a conflict situation at a choice point in the maze, then why does it not break down more often? If deprivation of food for 24 hours is conceived to be frustrating for the rat, then why does the animal not break down? Some change in phrasing or conceptualization is clearly necessary. One example of the neglect in differentiation is the failure to distinguish between a choice in which the animal gives up something and a choice in which the animal gives up nothing, one in which the goal remains constant and unthreatened but in which the animal has two or more paths to the same assured goal. If an animal is both thirsty and hungry then the animal would be more likely to feel threatened if it had to choose between food and water, getting either one or the other but not both.

In a word, we must define the situation or stimulus not *per se* but as incorporated by the subject, animal or human—by its psychological meaning to the particular subject involved in the experiment, that is, dynamically.

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